APRIL 1950

FIREMEN

FIFTY-FOURTH YEAR • NATIONAL FIRE PROTECTION ASSOCIATION

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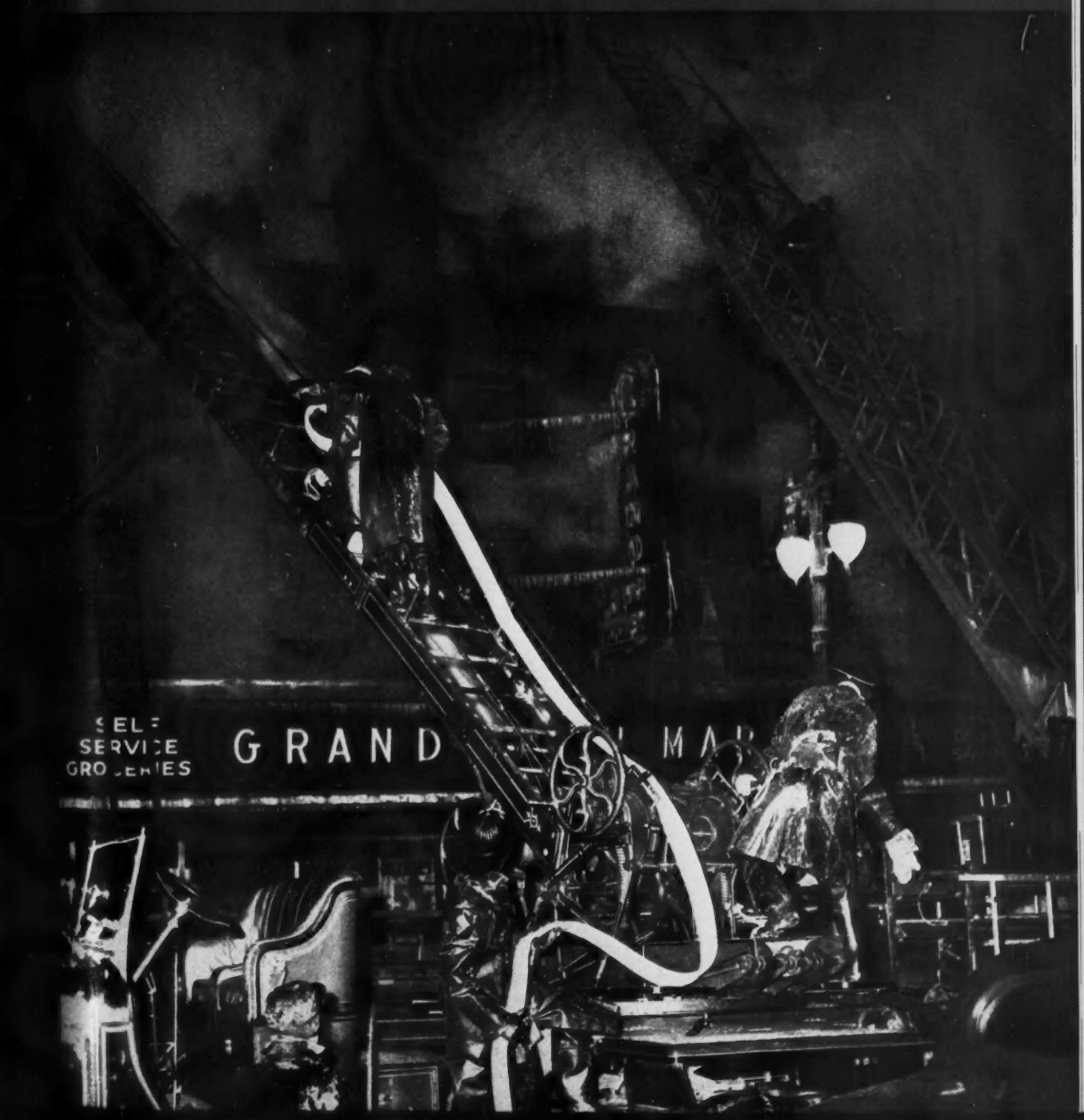

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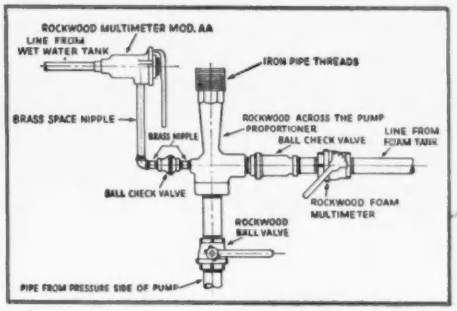
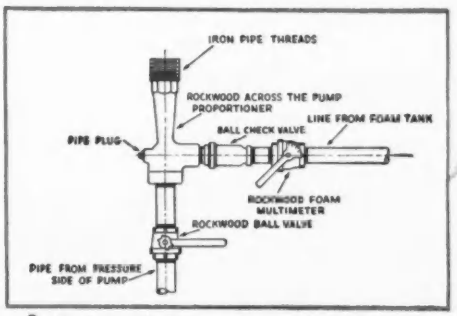
BATTLE CREEK, MICHIGAN

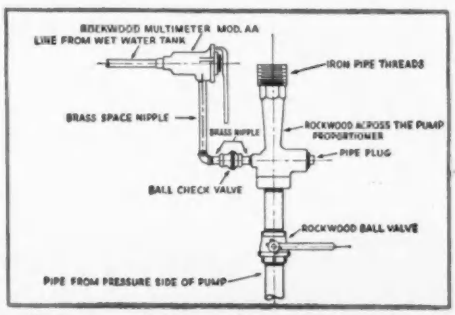
3 NEW ROCKWOOD AUTOMATIC PROPORTIONING UNITS FOR FEEDING FOAM LIQUID OR WETTING AGENTS INTO YOUR HOSE LINES



1. Rockwood Across Pump Proportioner Model Dual B for FOAM and WET



2. Rockwood Across Pump Proportioner Model Dual B for FOAM ONLY



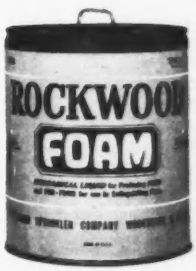
3. Rockwood Across Pump Proportioner Model Dual B for WET ONLY

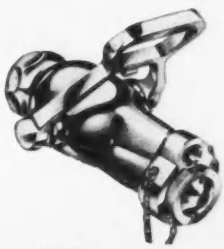
NO GUESS WORK—

Metering valve automatically mixes the right amount of Wetting Agent or FOAM liquid with water

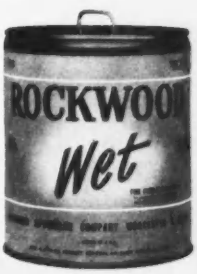
Here are three new Rockwood Automatic Proportioning units. One provides automatic proportioning for both FOAM liquid and Wetting agent, another is for FOAM liquid only and the third kit automatically proportions wetting agent only. All three kits are shown at left. They are known as the new type B Rockwood Across-the-Pump Proportioners. If you are planning to buy a new fire truck, be sure to specify one of these new Rockwood proportioners. They can also be added to the fire trucks you now have in service. Write for complete operating and installation data and prices.

To put out fires faster and more economically use Rockwood Foam Liquid with the new Type FFF Rockwood Fog-FOAM Nozzle.





The most efficient way to apply a *wetting agent* to most fires is thru a type SG-48 Rockwood Triple-action WaterFOG Nozzle.



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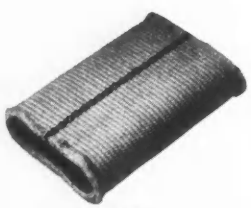

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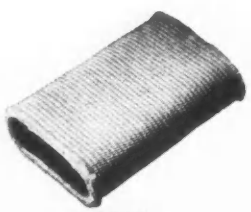

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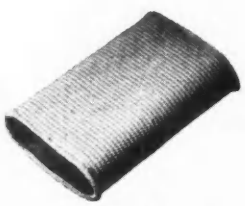
"PARAMOUNT" HOSE

Double Jacket
Designed for easy handling and long service on tough jobs. Ages well, withstands high pressures.



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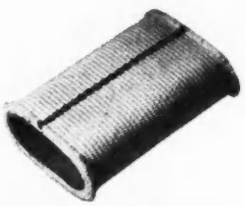
For long, trouble-free performance in communities where a light service hose is adequate.



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Made in strict accordance with the National Board of Fire Underwriters' specifications. Labeled or unlabeled.

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Firemen

Volume 17 Number 4

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The cover photo

Albany, N. Y., firemen are shown battling a 3-alarm fire in the Grand Cash Market on Albany's main shopping street on February 7. (*Joseph A. Reagan photo.*) First alarm at 8:34 p.m. brought 3 pumpers, 2 trucks, a Rescue Squad and the Underwriters' fire patrol (salvage). A second alarm 18 minutes later brought 2 more pumpers. Thereafter a special call brought 3 pumpers and another truck. Eighteen lines of hose were placed in operation. Recent reports by both the National Board of Fire Underwriters and the NFPA Field Service have called attention to deficiencies in the manpower and number of officers of the Albany fire force.

The real Villain

For fire fighters perhaps the most tragic story in the newspapers last month was the story of a fire in the veterans housing project at Oklahoma City in which 2-year-old Carolyn Thompson perished. A fire captain took a lot of punishment in searching the building and finally found what he thought was the child. Picking up the object and hearing the cry of "Mama" in realistic tones, he hurried from the building only to find that he had brought out Carolyn's doll, and that the child was still inside. He reentered and brought out the lifeless little girl. Certainly no one can find fault with the heroic fire fighter for such a tragic mistake, but there can be plenty of censure against the persons who for ten minutes selfishly refused to give up a party telephone line in order that the fire alarm might be sounded. It is doubtful if little Carolyn's life would have been saved had the fire fighter found her instead on the first attempt because she had remained for ten minutes in the smoke filled area and even the doll was blistered when rescued.

This was the second serious fire reported within a few days where there was major delay in giving the alarm because persons refused to relinquish use of a party telephone line. This is just one more reason why fire protection authorities throughout the nation insist upon having approved municipal fire alarm boxes that are available to the public and that cannot be interferred with by other usage or by simple mechanical failures. Fire alarm boxes are constantly under electrical supervision.

Had there been a fire alarm box at the housing project where the tragedy occurred, and had it been used immediately when the fire was discovered, who can say that both Carolyn Thompson and her "Mama" doll would not be there today. The cost of a few dollars for a fire alarm box at this location would have been a very minor expenditure when viewed with hindsight.

With threats of a nation-wide telephone service strike broadcast upon the radio almost daily, it behooves every community to no longer neglect vital fire alarm service. They should provide the best possible communications system for their fire department.

Cars for Fire Chiefs

From time to time we hear of cases where city fathers have raised their eyebrows when fire chiefs have requested for their officers cars that cost somewhat more than the lowest priced motor vehicle obtainable. Often, it is stated that police cruisers in the same community are low priced vehicles and they can see no reason for providing a high grade motor car for fire department officers.

Any such attitude fails to take into account the nature of the performance required of fire department vehicles. These must have outstanding performance in traffic from cold starts to high speeds and must have great acceleration so that no undue time will be lost when slowing down for dangerous intersections. In general, police vehicles are more numerous, serve smaller territories and are on constant patrol so that their motors are warm. Fire department officers usually supervise a large territory covered by a number of fire department stations. In many cities there are chief officers only at headquarters. Fire chiefs have to direct the operation of companies that may be located 2 or 3 miles closer to the fire than the chiefs, and be responsible for their effective use.

Perhaps the clinching argument is the observation advanced by the master mechanic of a large fire department. He commented that when the chiefs were given small inexpensive cars and the inevitable traffic accidents occurred on the way to a fire, they were often fatal or resulted in severe injuries for both the officer and driver. Since the officers of that department have been using heavier cars, the shop sometimes had to do body repair jobs but their men were spared serious injury.

After all, fire chiefs generally get several years use out of an automobile. While it may not be possible or desirable to buy the most expensive car on the market, the recommendation of the fire chief as to the car he feels is advisable for the best performance of his work certainly should be heeded by municipal officials. After all a difference of a very few hundred dollars spread out over several years is all that is involved. A fire fighting establishment that may cost thousands or even millions of dollars a year to operate depends upon the safe and prompt arrival of the chief officers.

54th NFPA Annual Meeting — May 15-18, 1950

Haddon Hall, Atlantic City, New Jersey

THE NFPA is to hold its 54th Annual Meeting at Haddon Hall in Atlantic City, May 15–18, 1950. This is the first time the meeting has returned to Atlantic City since 1942. For many years prior to World War II, the meetings were at Atlantic City on each even year, with meetings on odd years visiting locations in the Midwest, South, or in Canada. Last year's meeting was in San Francisco.

Beautiful Haddon Hall has been a "second home" to NFPA. The late Albert T. Bell, long chairman of the NFPA Board of Directors, was manager of the hotel which incorporated the best fire protection engineering advice in its design. The hotel's famed "Viking Room" on the top deck overlooking the Atlantic Ocean and the Boardwalk, was built with NFPA Annual Meetings in mind, although now the attendance at the meetings has increased to the point where some of the larger rooms must be used when the NFPA is gathered in general session.

Final plans for the meeting will be mailed to all members, including member fire departments, with the NFPA FIRE NEWS. However, tentative plans are sufficiently developed to give a clear pattern of the meeting. Many members from all parts of the world are making their plans to attend and be in Atlantic City in May to enjoy that famed resort during one of the most delightful seasons of the year. The overall pattern for the meeting will be quite similar to that followed last year.

Following registration, the entire day, Monday, will be devoted to simultaneous meetings of various sections of NFPA. The FIRE MARSHAL'S SECTION will devote the entire day to a program which will include fire prevention techniques, inspection problems and other topics of particular interest to state, provincial, city and county fire marshals and other fire prevention bureau officers.

The RAILROAD SECTION of NFPA also holds morning and afternoon sessions on Monday to discuss railroad fire protection problems. On Monday afternoon the ELECTRICAL SECTION of NFPA will consider reports of committee panels proposing amendments to the National Electrical Code. These proposals are transmitted to the section by the Electrical Correlating Committee.

Monday evening traditionally is devoted to a GENERAL SESSION at which the various officers of NFPA present their annual reports. These will include the President, Chairman of the Board of Directors, General Manager, and Treasurer. It is customary to have at least one outside speaker of national reputation.

An Invitation

The location of the 1950 NFPA Annual Meeting at Atlantic City gives thousands of fire departments and fire fighters an opportunity to sit in at any or all of the sessions. Traditionally, volunteer or paid firemen in uniform do not pay registration fees at the NFPA Annual Meeting. See that your department has several representatives present so that someone will be representing you at each of the simultaneous sessions. Here is an outstanding opportunity to sit in with the "Top Brass" of fire protection as fire protection standards are developed.

Tuesday there will be as many as four simultaneous sessions. The FIRE MARSHAL'S SECTION will have their usual arson forum and election. The ELECTRICAL SECTION will continue its deliberations. There will be a PUBLIC INFORMATION SESSION in the morning with reports from committees on: Fire Prevention and Clean Up, Fire Prevention Education in Elementary Schools, and Public Relations, plus a number of interesting speakers on these subjects.

Tuesday will also see an all-day INDUSTRIAL SESSION including speakers on fire problems of special interest to industrial members of NFPA. The following committee reports will be presented: Fire Brigades and Watchmen, Finishing Processes, Ovens and Furnaces, Combustible Fibres, Protection of Records.

Tuesday afternoon will include a MUNICIPAL, RURAL, AND FOREST FIRE PROTECTION SESSION that should be of special interest to fire fighters. Committee reports to be presented include: Firemen's Training, Fire Department Equipment, Farm Fire Protection, and Dehydrators and Dryers.

Also on Tuesday afternoon will be held a BUILDING CONSTRUCTION SESSION presenting reports on committees on: Building Construction, Safety to Life, Protection of Openings, Air Conditioning, Protection Against Lightning, and General Storage. There will be discussion of the concern of building officials with fire safety, and the influence of combustible interior finish and acoustical materials on fire spread.

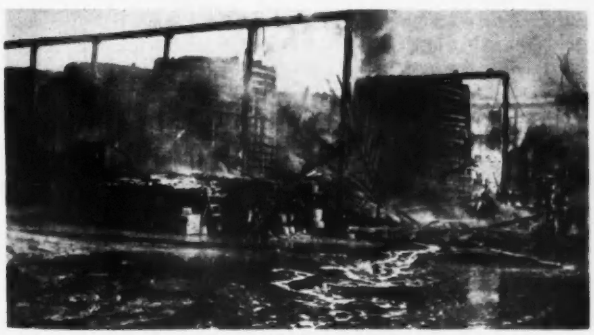
Wednesday morning: SESSION ON FLAMMABLE LIQUIDS, GASES AND HAZARDOUS CHEMICALS. These will be a report of the Committee on Flammable Liquids covering a proposed new Flammable Liquids Ordinance. This includes provisions on self-service gasoline stations, and liquefied petroleum gases. The Committee on Gases will propose amendment of their standards. Also considered will be: tentative Standards on Magnesium, Extinguishing Methods for Hazardous Chemicals, and Dust Explosion Hazards.

Wednesday afternoon will be devoted to Session on HOSPITAL, INSTITUTIONAL, AND SCHOOL Fire Safety. This will include the hospital inspection program sponsored by the National Board of Fire Underwriters, and speakers representing the American Hospital Association. Amendments to standards on Hospital Operating Rooms will be acted upon.

Also on Wednesday afternoon will be held a TRANSPORTATION SESSION with reports from the following committees: Marine Fire Protection, Aviation and Airport Fire Protection, Truck Transportation. Wednesday evening there will be a motion picture program showing new technical and educational films on fire prevention and protection.

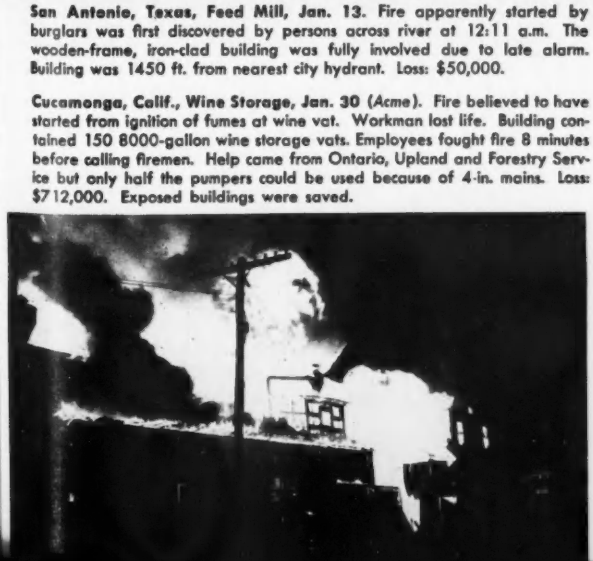
Thursday will have two sessions run consecutively so that members can start home in the afternoon. The first session is on EXTINGUISHING AND ALARM SYSTEMS with reports on Special Extinguishing Methods, Signaling Systems and Thermostats including home fire alarm systems, Public Water Supplies and Fire Pumps. The final GENERAL SESSION includes ratification of action taken at various sectional meetings and group sessions, and election of officers.

Glens Falls, N. Y., Towers Hotel, Feb. 22 (*International*). Fire started by smoker near rear of 2nd floor. First alarm was box pulled by passer-by at 4:15 a.m. Miraculously, none of the 45 guests were killed. Eighteen were taken down ladders, others jumped as fire swept the 78-year-old building in minutes despite enclosed stairways. Temperature was 10° below zero and snowing. According to Chief Frank M. Preston, 5 engine, 1 hose, and 1 ladder companies responded and held the fire to the hotel with 13 hose streams including heavy streams. Rear walls fell. Top 10 ft. of aerial was destroyed. Loss estimated: $500,000.



San Antonio, Texas, Feed Mill, Jan. 13. Fire apparently started by burglars was first discovered by persons across river at 12:11 a.m. The wooden-frame, iron-clad building was fully involved due to late alarm. Building was 1450 ft. from nearest city hydrant. Loss: $50,000.

Cucamonga, Calif., Wine Storage, Jan. 30 (*Acme*). Fire believed to have started from ignition of fumes at wine vat. Workman lost life. Building contained 150 8000-gallon wine storage vats. Employees fought fire 8 minutes before calling firemen. Help came from Ontario, Upland and Forestry Service but only half the pumpers could be used because of 4-in. mains. Loss: $712,000. Exposed buildings were saved.

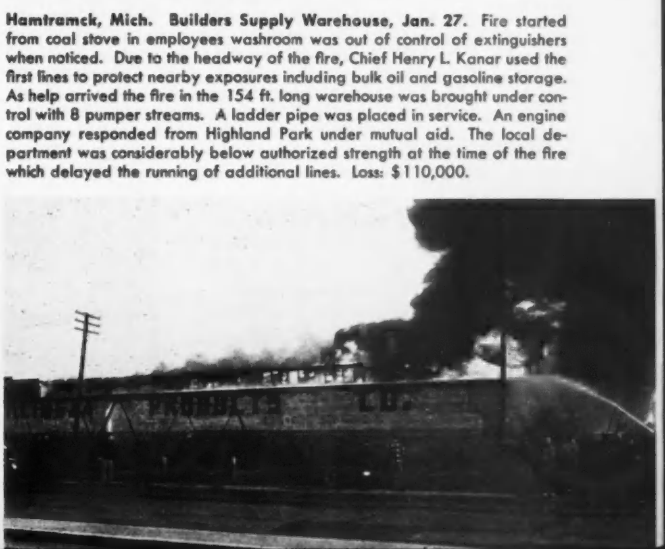


Union City, N. J. Shuffleboard Factory, Jan. 20 (*Acme*). This morning fire, of unreported origin, destroyed a one-story frame and concrete building housing the American Shuffleboard Co. Intense smoke delayed thousands of motorists on a heavily traveled highway.

near Atchinson, Kans. State Orphans' Home, Feb. 13. Phone lines were burned. Maintenance man discovered basement fire in storage room at 7:00 a.m. and drove two miles to fire station. Fire had spread to first floor and heat was extending up open wooden stairways of 4-story building. Fortunately rooms above were closed. Three 2½ and two 1½-in. lines halted blaze. Loss held to $40,000 by Chief Harley Yocum's department.

Santa Barbara, Calif. Lemon Packing Plant, Jan. 27 (*Acme*). An estimated $500,000 loss occurred at this packing plant of the Goleta Lemon Association. A watchman reported that an intruder started several fires before being driven away by gunfire.

Hamtramck, Mich. Builders Supply Warehouse, Jan. 27. Fire started from coal stove in employees washroom was out of control of extinguishers when noticed. Due to the headway of the fire, Chief Henry L. Kanar used the first lines to protect nearby exposures including bulk oil and gasoline storage. As help arrived the fire in the 154 ft. long warehouse was brought under control with 8 pumper streams. A ladder pipe was placed in service. An engine company responded from Highland Park under mutual aid. The local department was considerably below authorized strength at the time of the fire which delayed the running of additional lines. Loss: $110,000.



Fireman directing ladder pipe at close range.

Dayton's Biggest Fire

From report by R. B. Kurfiss,
Chief Inspector, Bureau of Fire Prevention, Dayton

Operation of deluge and turret guns. Fire showing through roof.

A SECOND alarm of fire occurred Friday evening, January 6, at the Virginia Cafeteria on East Third St. The first alarm was received by phone at 6:21 P.M., followed by a second 10 minutes later. Thereafter apparatus was called by radio as needed as the fire progressed.

The building was a 4-story brick composite, known as the Clegg Building and was more than 80 years old. It was occupied principally by the Virginia Cafeteria. However a drug store occupied some space in the first floor and basement. There was also a shoe store in the building.

The building was exposed on one side by an old three-story brick building occupied by a youth center and having a solidly enclosed front on the two upper floors. This building had been sprinklered but sprinklers had been out of service since a former tenant vacated the building. The exposure on the other side also consisted of a three story brick building. A shoe store in this building suffered some damage when the fire communicated through a defective party wall into the ceiling of the first floor. An unusual incident occurred in that this fire traveled through the ceiling above the drug company and shoe store in the Clegg building with little damage in the ceiling space, to ignite the ceiling above the exposed shoe store.

The fire originated in a frame enclosed women's locker room in the rear of the basement of the Virginia Cafeteria. Two women employees while on rest period went to the locker room at 6:00 P.M. One of the women looked at her watch to see when it was time to return to work. It was 6:14. Just after this they noticed fire in one of the lockers along the west wall. The lockers were of light wooden framework with cardboard partitions, back and top.

After seeing the fire, one woman went to the first floor serving kitchen reporting the fire in the basement. The other remained to remove her fur coat from a locker adjacent to the fire. She placed this on a table and ran back to obtain her purse and umbrella. At this time flames were extending over the tops of the lockers. Going to the first floor she told other employees about the fire. Several attempted to go to the locker rooms to obtain personal belongings, but could not because of heat coming up the stairway.

A bus boy obtained a nickel from the cashier and ran to the public telephone but by this time fire had burned through the insulation of the telephone wires. The phone was dead. The telephone wires extended across the basement ceiling over the lockers. He then ran to the second floor kitchen and a call was sent to the fire department over a different phone. A police sergeant also put in a call from nearby police headquarters at the same time.

The first arriving engine stretched from a hydrant near the front entrance and attempted to enter the basement by the inside stairway at the rear. They were unable to "make" the stairs because of the intense heat and smoke issuing from the enclosed locker room. Two first alarm engine companies entered from the front and two attempted to gain access by the rear.

The second engine company to arrive being unable to make the stairway opened the sidewalk freight elevator doors. At this time a minor smoke explosion occurred which burned two members of the company inside the building. The opening of the sidewalk elevator failed to relieve the smoke and firemen were unable to gain access to the locker room area. Men with masks entered the basement but due to the intense heat were unable to reach the locker room or use hose lines effectively.

The first floor construction consisted of 2 x 14 in. joists, 12 in. on center with two courses of $\frac{5}{8}$-in. hardwood floor topped by one to two inches of terrazzo concrete on expanded metal lath. The basement stairway was the only opening through the floor. In addition to the sidewalk elevator there was a brick enclosed freight elevator just inside the rear door of the restaurant.

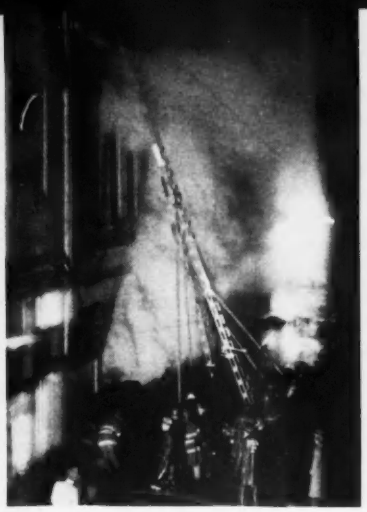
Holes were then put through the floor of the restaurant and the first cellar pipe was placed directly into the locker room from the first floor. Two additional holes were cut for use of cellar pipes and distributors. Difficulty in cutting suggested the need for an air hammer which was summoned by radio and which made it possible to pierce the floor with less time and inconvenience to firemen.

These operations were not effective due to the fact that the fire had spread over an area greater than the range of the cellar pipes, and the depth of the floor joists and thickness of the floor limited the angle of the streams. The fire continued to burn in the hollow joist space.

Lines were placed on all floor levels front and rear of the building involved in fire to prevent fire from involving other structures. Telescope cellar pipes were put into play in front of the restaurant in an attempt to prevent the fire from involving the entire area of the basement. This also proved ineffective.

Firemen wearing masks and working in relays continued to try to control the fire in the basement until the floor was believed unsafe, and lines were withdrawn from the first floor interior and back to the sidewalk elevator in the basement.

Construction of the first floor was such that most of the heat and smoke remained in the basement. As the fire progressed, oxygen deficiency increased,



← View from narrow street in rear taken early in fire. Later smoke made photography impossible at this location.

Above. Fire braking through roof. Note that street lines have been shifted to protect exposures.

in turn increasing the volume of smoke. The combination of lack of oxygen, extreme heat, high carbon monoxide content, and density of smoke succeeded in overcoming firemen equipped with masks in a relatively short period of time. Firemen were even overcome in the adjoining basement where there was no actual fire.

It is interesting to note that all three types of masks, regular equipment in the department, were used at this fire: MSA "All Purpose" mask, Scott Air Pak, and the McCaa one-half hour and one hour oxygen mask.

During the fire there were 48 firemen hospitalized at three hospitals. In addition the Red Cross disaster unit treated 37 firemen in their trailer unit and 60 in an emergency station established in a market near the fire. These 97 men remained on duty. In explanation of the number of men overcome or treated for the effect of smoke it is believed that in the case of the canister type mask, the oxygen deficiency plus the extreme concentrations of carbon monoxide and density of the smoke, depleted the activated materials in the canisters much quicker than would have occurred under ordinary fire conditions. This resulted in the men feeling the effects of smoke much earlier than would be expected. In the case of the Scott Air Paks and the McCaa type of oxygen mask, it is believed that the extreme severe working conditions and the heat caused the men to suffer a state of exhaustion rather than near asphyxiation.

Weather conditions seriously hampered the operations of the department. The heavy atmospheric conditions had the tendency of holding the smoke down so much that at times it was necessary to go 50 ft. from the building at both front and rear to get air. Drizzling rain and sleet changed to snow at 6:39 P.M. which continued for the night.

As it became apparent that the fire could not be controlled in the basement, steps were taken to provide large streams for the time when the floor would collapse. This was accomplished by having in front of the building three deluge guns, each supplied by two or three 2½-in. lines and equipped with large tips. Another deluge gun was placed in the street at the rear of the restaurant and another on the second floor of the market in the rear.

Three aerial trucks equipped with ladder pipes were placed in front of the building with 3-in. ladder hose supplied by two 2½-in. lines. Six hand lines were placed on various adjoining roofs. When a portion of the floor collapsed, turret nozzles were placed in operation. However, at this time the fire had communicated to the flooring of the second floor through the hollow space surrounding enclosed cast iron columns. When the fire broke through the second floor the heavy streams were used to control its spread. Collapse of a column supporting an I beam at the second floor permitted fire to involve the rear of the second and third floors. However, the heavy streams confined the fire to the rear one-third of the Clegg Building and prevented extension to exposed property.

There was no shortage of water. Four-way hydrants are located on each of the four corners at each intersection and on each side of the street at the center of each block. Ten pumpers supplied 30 2½-in. lines, using 12,800 ft. 2½-in. hose and 1100 ft. 1½-in. hose. There were 699 ft. of ladders used and 38 salvage covers. Aerial ladders at the fire consisted of 1–100 ft., 1–85 ft., 3–65 ft. Of 135 firemen subject to call, 133 or 98.5 percent responded from their days off.

This fire is another example of the importance of regulations requiring installation of automatic sprinkler protection in inaccessible basements of mercantile establishments. When the structure was remodeled ten years ago the combustible flooring should have been replaced and an non-combustible floor substituted. If this had been done, it probably would have been possible for firemen to extinguish the fire in its early stages. The fire also indicates the importance of limiting combustible contents in employees' locker rooms. It is possible that metal lockers would have confined the fire to a single locker.

Loss from this fire was $291,000.

Log Cabin Arbor Fire Company

THE Log Cabin Arbor Fire Company is one of the new members of the NFPA Volunteer Fire Company Section. This is the No. 2 Fire Station of the Cherry Valley Fire Protection District of Illinois. The Company was organized in September 1949, has a new brick veneer, cement block fire station with siren located on the roof. There are 21 active firemen under Chief Forest Houghton of the Fire Protection District and Asst. Chief Emil Zeller of the Log Cabin Arbor Company.

Apparatus consists of a 1942 Ford with a Waterous pump and a 600-gal. reserve tank with 1-in. hose reel and small fog nozzle. There is also a 1942 Ford with Howe pump. The department plans to obtain another tank truck to supplement water carried on the pumper. The fire station and trucks are financed by taxes, but the firemen raise funds for fire clothing by raffles and dances.

Members are paid $1 per hour for fires and $1 per drill. Officers attend the State Fire School each year and return to instruct members at monthly drills at which each man operates the pump at draught. One man is assigned to check equipment daily.

Reduction of Smoke Damage

by Chief Fred J. Wells
Fire Department, Fargo, North Dakota

From paper presented at 22nd Annual Fire Department Instructors Conference, Memphis, Tennessee

THE desire for a reduction in smoke damage certainly is not something new to the store owner, underwriter, the insurance agent or the insurance adjuster. Nor is it new in the fire service. There isn't a fire chief in the nation who has not at sometime wondered about a paid claim when it was received and entered into his loss record. There are few fire chiefs who have not wished, while listening to housewives complain of smoke damage, that there was something they could do to help reduce the damage by smoke.

After having listened to complaints of many individuals, plus a personal dissatisfaction on the size of some losses paid for smoke damage, we started a check on the relationship between smoke damage and fire damage. It soon became apparent that we should go deeper into the matter of smoke damage. Our first investigations gave good evidence that at different fires nearly equal on all other points of comparison there was a large difference in the amount of smoke damage.

Looking for an answer as to why this variation in similar fires, we ran into the idea that smoke should be given consideration, not so much from the angle of reducing smoke damage, but from the need of reducing fire damage and controlling the spread of fire.

At this same time we discovered that our fire reports showing a high wind velocity under weather report section of our company run reports had less smoke damage than similar fires with a lower velocity or no wind during the fire.

It appears that the first idea given to the removal of smoke at a fire was when a few bold fire chiefs stood their ground while being ridiculed and condemned for doing what we today call ventilation. Present day experience proves these individuals were correct in their thinking.

At the time we made the discovery regarding wind velocities we were not using mechanical smoke extractors. Checking a little deeper it was learned that invariably where a building was located where the wind could enter from one side, pass through the building and out the other side and HAD WE OPENED AT ONCE, we did not have the amount of smoke damage after the fire as we did where conditions for the removal of smoke were not favorable. Our conclusion was that smoke damage can be reduced by a fast mechanical removal of the smoke from within the building.

Rear view of the Fargo Fire Department's smoke extractor. Note space for cord around grill. Also extra fuses and plugs.

BEFORE going into the subject of mechanical smoke extractors we would like to qualify our reason for opening a building at once and to set a point in fire fighting operations where ventilation operations changes from a law of averages to the most important operation in "scientific fire fighting."

Approximately 94 percent of the fires we fight are extinguished with something smaller than a 2½-in. line. The next 4 percent are extinguished with a 2½-in. line. The remaining 2 percent require everything we have, plus what may be borrowed from neighboring cities.

Is it not generally true that where an immediate advance was made to the seat of a fire, extinguishment was rapid, giving a positive reduction in both fire and smoke damage? Just how much difference would there have been in actual fire damage in any of the fires falling into the 94 percent classification had ventilation operations started immediately? The truth is surprising. THERE WILL BE LITTLE OR NO DIFFERENCE IN ACTUAL FIRE DAMAGE OVER THAT WHICH HAS ALREADY OCCURRED UP TO THE TIME OF ENTRY.

The dollar and cent relationship between fire and smoke damage cannot be formulated with any degree of accuracy. However, records show that we can look forward to smoke damage exceeding fire damage in-so-far as the smaller fires (the 94 percent classification) are concerned.

Last, but not least, what are the barriers between firemen and the fires they fight? To our way of thinking, they are: SMOKE, HEAT, and GASES. All three are produced from the burning of some materials, or parts of the structure. Also to our way of thinking, the extinguishment of most fires would be a simple problem or operation if we could readily remove the smoke, heat and gases blocking advancement to the fire. Let us concur with those who believe that if the barriers of smoke, heat, and gases are not removed, the fire is going to extend, producing more smoke, heat and gases, creating a still greater distance between the firemen and the fire.

Accordingly, we say, every fire falling into the classification where it can be extinguished with something smaller than a 2½-in. line should be ventilated or opened up at once. At once means as soon as the line or lines are in position and the water is at the nozzle.

We also say that where but one 2½-in. line is needed the proper move is to ventilate at once. It appears that over 90 percent of the fires in this second classification can be grouped with those just mentioned in the 94 percent classification. This is equal to 3.6 percent of the total group of fires. Adding this 3.6 percent to the 94 percent, we obtain a figure of 97.6 percent of all fires that we say should be opened up immediately. Any large fire falling into the last 2.4 percent also definitely demands ventilation, but the WHERE, WHEN and HOW of the ventilation changes in scope to where it removes itself from the field of smoke damage to the prevention of fire damage. The chief place where prevention of smoke damage enters into the operation at major fires is where exposures and their contents will be affected by smoke.

We know from experience that natural ventilation is seldom adequate for the speedy removal demanded if a reduction in smoke damage is to be effected. This is particularly true where a high content of smoke is present. We cannot always depend upon natural ventilation because wind velocity, direction and atmospheric conditions may be against us. To overcome this inefficiency we are employing mechanical smoke extractors. Credit for the use of the first smoke extrator for American fire service goes to the Minneapolis Fire Department. In 1915 or 1916 Chief Ringer put a large homemade one in use.

Today there are several different models on the market that work well if properly used at a fire. They are perhaps the most valuable piece of equipment a department can have for the overall reduction of fire loss. They are

generally rated as to the number of cubic feet of air they will move in one minute. Four common sizes are: 2,500, 3,500, 5,000 and 10,000 cu. ft. per minute. The smaller sizes are electrically driven. The larger are driven by gasoline engines. The 3,500 cu. ft. size is large enough to do a very efficient job and still light enough to be handled easily by two men.

Smoke extractors vary in price according to size and as to whether they are a standard model or one designed for use in gas filled areas. It is well to have at least one smoke extractor that is of an "explosion proof" type. Any fire department can build their own smoke extractors.

The last one we built cost us $49.81 including the 125 ft. cord for connecting into an electrical circuit. We'll admit maybe the ones you can buy look more fancy than ours. We did buy two before we built any. We have one rated at 1,000, four rated at 3,500, and one rated at 10,000 cu. ft. per minute.

Extractors are carried so as to have them all at a fire in the downtown district on first alarm assignments. In the residential areas we have three immediate available. If we need more we use two-way radio to obtain them.

DURING THE PAST YEAR AND A HALF WE HAVE REDUCED OUR SMOKE DAMAGE CLAIMS ON AN AVERAGE OF 40 PERCENT THROUGH THE USE OF SMOKE EXTRACTORS. ON SEVERAL OCCASIONS NO CLAIMS WERE SUBMITTED, A 100 PERCENT REDUCTION. This statement is not based on fire department estimates of smoke damage reduction but has been taken from statements of insurance adjusters and their companies.

HOW have we been able to accomplish this reduction in smoke damage? First, what is smoke damage? To answer that question we offer the following definition and make apology for doing so. Since we could not find one, we put this one together. "Smoke damage is the chemical and physical change that takes place in or on materials which have been under the influence of an atmosphere of products of combustion."

From this definition we see that our efforts must deal with chemical and physical changes. It appears that these chemical changes do not always show up at once although the contamination starts almost immediately in about any concentration of smoke.

A rapid removal of smoke from a building tends to dilute the contaminating atmosphere. Experience has shown us that any change toward a weaker concentration of smoke will give a corresponding reduction in the physical damage and will retard or reduce the chemical changes. Experience has also proven to us, that it has been the physical contamination that has been the costly item in smoke damage claims rather than the subsequent and more subtle chemical changes.

THERE are three convenient ways to cause a dilution of an atmosphere of smoke during a fire: (1) by a rapid removal of the smoke from within the building; (2) by blowing large amounts of fresh air into the building; and (3) by a combination of the first two methods. We use all three but start our operations using as rapid a removal as possible. This we do to lessen the amount of smoke which otherwise would remain in contact with the materials and contents within the building.

Let us not forget that AN ATMOSPHERE OF SMOKE DOES NOT HOLD ITS HEAT LONG. Heat is quickly absorbed by walls, floors, and contents. We are of the opinion that TEMPERATURE PLAYS A BIG PART IN THE PENETRATION OF SMOKE INTO MATERIALS, DEPOSIT ON MATERIALS, AND IN THE PENETRATION OF SMOKE ODORS. Hot gases from the fire appear to be closely related to the smoke odors which are cutting and irritating as long as two or three days after a fire. This appears to be true, particularly where a fairly high volume of distilled fire gases has entered an exposed structure at a temperature close to the ignition temperature of ordinary paper (446°F) but were cooled when they came into contact with the contents of the structure. Unburned gases of combustion may be considerably hotter than the normal ignition temperatures of ordinary combustible merchandise which will quickly absorb heat and smoke.

POSSIBLY the best illustration we can give to show the results of a fast removal of smoke, took place at a fire we had in a general warehouse. The fire was on the first floor in and around the "lay-by" room, containing stored linoleum, rubber goods and other items of materials that are producers of heavy smoke when burning.

The fire originated in the waste paper box on the outside of the building, passed through the middle crack of a double door into the lay-by room. From there it extended into the linoleum and other items and finally went up the elevator shaft. Upon the arrival of fire companies, building was heavily charged with smoke on the first floor. The second floor was filled to the point that required masks for entering. As soon as lines were laid, a hole was cut into the roof of the penthouse of the elevator's shaft. This was done to hold fire in its present location, by giving it an almost vertical path to follow. Immediately upon opening the penthouse roof, men with lines were able to enter the first floor and surround the fire.

While this was in progress orders had been issued to take the ten thousand cu. ft. per minute smoke extractor to the roof proper, get a hole into the roof and to place the suction tube of the extractor into the second floor even with the ceiling and to open all windows possible for an intake of fresh air. At this point I will quote from a letter received from Maine & Baker, the insurance adjuster:

"You and I stood in the alley and watched your boys work that Sunday afternoon with gas masks and yet how surprised we were when after the fire was over that we could walk through the second floor of this building filled with overstuffed furniture, floor lamps and other cloth materials which showed practically no smoke deposit. This was brought about by your ingenuity in cutting a hole in the roof and dropping the extractors through into the second floor, eliminating the smoke so rapidly that it left no deposit."

There was also definite evidence to show that temperature plays a big part in the penetration and the ease in which smoke odors can be removed. Smoke odors on the second floor disappeared long before those on the first floor. We also found that the locations of the same type and class of material made a difference in the degree of smoke penetration into the material. Material 40 feet closer to the fire was the heaviest with smoke odor. Both locations were such that the actual fire had no direct bearing on the material but smoke came into contact with the material closer to the fire at a higher temperature than it did 40 feet further removed from the fire. No claim was made for discoloration by smoke on walls, ceiling or contents on the second floor. Marks showing where condensation had taken place on the second floor could not be found.

Now coming into method number two: blowing large amounts of fresh air into the building. We use this type of dilution when operating in attics or places where we are trying to head off a fire. It is primarily used to provide fresh air for the men working. However, another idea behind this method is to try and keep the temperature of the smoke as low as possible or cool it off as it comes into spaces where we are working. Illustrative of this, we had a fire in a residence. Fire originated in the basement behind a wainscoting. It communicated into another concealed space, spread upward to first floor and through another space and vertical opening to the second floor. As soon as a hole was made in the basement partition the natural chimney began its action and fire fighting operations advanced to the second floor. The first floor remained practically smoke free due to our extractors working there in the usual manner. It was found that the second floor was filling fast with smoke making it impossible for men to work there. A smoke extractor was set

(*Continued on page 20*)

When the Fire is Out

by Anthony J. Mullaney
Chief Fire Marshal, Chicago Fire Department

Concluding installment of paper presented at the 22nd Fire Department Instructors Conference, Memphis, Tennessee, January 12, 1950.

IMMEDIATELY after a fire is under control, the officer in charge at the scene should appraise the equipment surrounding a fire to determine if the apparatus had been placed advantageously to attain maximum efficiency and speed of operation. He should note any errors which may have been made by the participating units and at the same time make a survey to see that adequate care is given to all equipment to insure its return to service. All hose and appliances not in use should be reassembled and properly placed on the apparatus in order to allow some of the fire fighting units to be returned to service in the minimum amount of time. In relocating companies for further service, pumpers should be connected at a point closest to the fire, on the same side of the street, or even from a side street if necessary, so that traffic lanes can be opened as speedily as possible. Experience has proven that the most expedient and efficient manner for companies to pick up for return to quarters is to have all pumper and auxiliary units disconnect hose and move lines to the same side of street where their hydrants are located. Hose should then be rolled from pumpers toward the scene of the fire with male couplings placed in center of the rolls for full protection. Hose that leads into the fire building or to roofs adjoining thereto, can later be lowered, brought out of building, straightened, uncoupled and rolled up with the least amount of confusion. This method allows for greater maneuverability of apparatus and reduces the necessity of driving vehicles over charged or uncharged hose lines.

Experience has proven further that when a fire is brought under control, pumpers operating closest to the fire should operate two or more hose lines. This practice will reflect a saving in cost of operation and certainly will conserve on mechanical maintenance and further expedite the clearing of streets.

Care should be exercised in extremely cold or sub-zero weather to prevent charged or uncharged hose lines from becoming encased in ice. However, if it is impossible to prevent this condition, it is extremely poor practice to chop the ice in an effort to free the hose lines as it is easy to bruise or rupture the lines in this manner. The most sensible means of overcoming this problem lies in use of rock salt, hot water or steam, if available. Hose that is frozen stiff should be thawed out at intervals and carefully folded so that sections can be piled on apparatus and returned to quarters. It can then be given immediate care and restored to service without damage.

In like manner, ladders and other equipment should be removed from the scene as quickly and carefully as possible. This is particularly important when freezing conditions create special hazards, and where damage can easily result through negligent or careless handling. Officers should see that icy streets and sidewalks are sanded or salted as an extra precaution to prevent injuries to firemen and citizens as well. It is also important for an officer to check and have removed any broken glass in windows, hanging cornices or any other heavy material that may fall from above. Holes in sidewalks and floors, open elevator shafts and other such hazardous openings should be carefully boarded up or protected in other ways to prevent injuries to firemen and citizens.

Cooperation with Other Agencies

FOR obvious reasons, no city can afford to maintain modern wrecking equipment even though it would serve a desirable purpose in relieving firemen under certain conditions of many hours of tedious and hazardous hand labor. Lacking this equipment, fire departments should develop close cooperation and working agreements with all wrecking companies within their scope of activity. In this, they should be careful to arrange in advance either by contract or written agreement so that they will be immune from any legal complications that may arise from use of such equipment. There are many of these working agreements in existence at the present time whereby wrecking companies can be called on to provide heavy cranes, bulldozers and other such machinery to remove persons buried in wreckage, pull down dangerous walls, salvage valuable merchandise and quickly uncover fires in ruins which might otherwise require many hours and often days of usual fire operation.

Likewise, working arrangements should be maintained with the police and public utility companies to cooperate in stopping gas leaks, removing dangerous wires and preventing unnecessary delays to street traffic. In these days of congested travel in almost every city and town, traffic delays in many instances can prove more of a loss in dollars and cents than that actually caused by a fire. However, this condition can be reduced to minor proportions with the cooperation of the police and other governmental agencies. An officer should notify the health authorities immediately when he is confronted with perishable foodstuffs so as to prevent any leak of contaminated foods to the public markets.

The ranking officer should make a careful check into the cause of any fire. If he finds a fire that is of a suspicious nature, he should refer it immediately to the arson investigation agency in the area involved, if local law does not require him to perform the investigation himself. He should also detail a fireman to guard all evidence until photographs can be taken of the scene of the fire. In this connection, the officer should immediately interrogate the owners, employees or any others involved in a suspicious fire, and make certain this is done in the presence of an impartial witness. The officer should make a record of this interview immediately upon his return to quarters and prepare himself in all ways in the event he is called to testify on the matter in court. An officer who develops the habit of careful observation and maintains accurate records will greatly aid those responsible for the investigation and prosecution of arson. He will thus directly and indirectly help to reduce the loss of life and property that can be attributed to deliberate burning.

Careful observation, investigation and the maintenance of reports of fires serve useful purposes in other ways. They are factors that contribute to a reliable record of the work of a fire department and point up the causes, frequency and methods of eliminating fires. In turn, these records can prove a valuable lesson to those who are interested in increasing their knowledge of their chosen profession.

The very nature of fire fighting often imposes the need for instant judgment and decision on the part of an officer. As a consequence, our average of errors may run higher in our field than in other types of business or professions. A ranking officer should never reprimand company officers on the fireground in the presence of their subordinates and citizens. An efficient commanding officer will correct such errors quietly, keep mental notes of the incident involving errors of judgment and operations, and discuss it at an officers' conference in order to prevent any future repetitions. Oftentimes an officer or subordinate may improvise methods of exceptional value in an effort to cope with a serious situation. In such instances, due credit should be given them and the entire department informed of the incident for purposes of instruction or future application under similar conditions.

Preventing Looting

MANY persons are under the impression that insurance companies reimburse owners for all loss of property at fires. As a result of this thinking, exposed property becomes a temptation to many who would never think of stealing under other circumstances. Unless special efforts are made to guard fire premises, looting is one of the ever-present problems with which departments must cope.

Due to the manner in which fires must be fought, fire-involved buildings present conditions that make for easy and undetected stealing. As everyone is aware of these conditions, firemen are under a cloud at the very start, and are often mistakenly blamed for all and sundry acts of looting. Naturally there are some who have been guilty of this offense, but there are many other contributing elements that enter the picture, which if given proper and just analysis would clear fire departments of a greater part of this undeserved criticism or calumny. An alert ranking officer can protect the reputation of his department and men by continuous supervision of all movements of companies participating at a fire. Subordinate officers that have a thorough knowledge of the work being performed by each unit and each individual working at the fire can keep their companies intact and under complete control. Thus with all officers cooperating along these lines, it is easy to account for the movements of all concerned at a fire. The end result of such protective supervision will aid toward absolving firemen from any blame when valuables are missing from out-of-the-way places not directly involved in the fire.

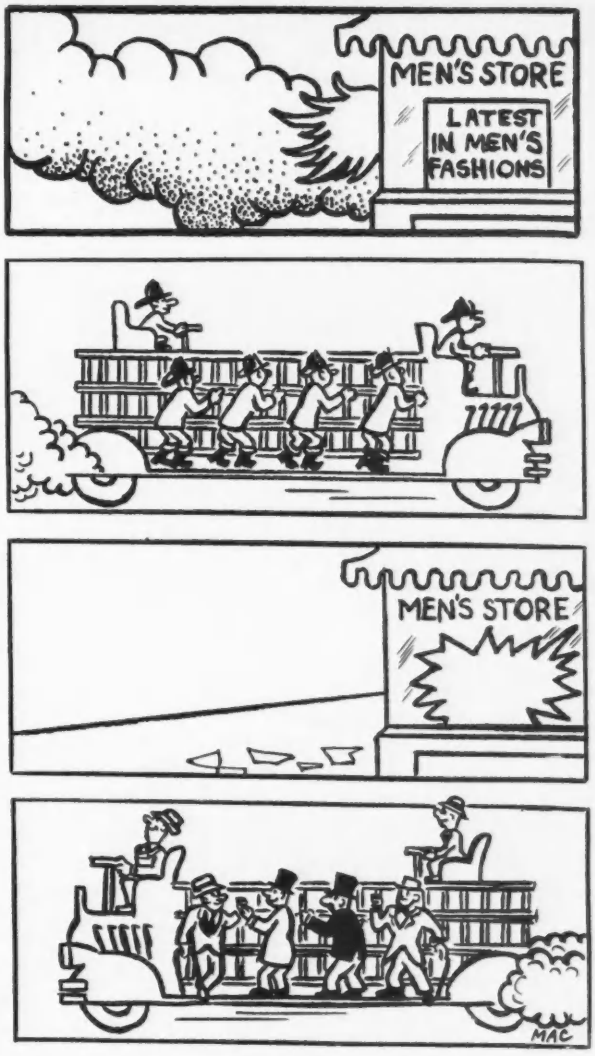
Chief officers, company officers and firemen should further protect against the loss of valuables by careful examination during overhauling processes, and as previously stated, should avoid removing any burned material from the premises except burned structural members that would impede efficient overhauling. Such care might unearth supposedly lost articles from the debris. At the same time it would help eliminate unsightly rubbish on the outside of the building which could be blown or carried around the neighborhood thus creating an added nuisance which is something to be avoided.

Prevent Unauthorized Entry

AS an added protection to his men and himself, an officer must make certain that no unauthorized persons are permitted on the fire premises. He must also keep close check on those who may have legitimate reasons for entering. When large amounts of valuable property are exposed, it is desirable that an officer check with the owner or his agent before leaving the fire to be reasonably certain that the property is intact when it is turned over to those in authority.

The officer in charge at a fire should also observe the action and behavior of all the officers and men under his command to make certain they do not relax into slipshod deportment that would reflect unfavorably on the department. We must remember we are all very much in the public view at the scene of a fire and consequently present an open target for public criticism.

All these operations tend to aid good public relations, but I wish to add one more point. As you all know, newspaper reporters commonly frequent scenes of fires on the hunt for news. Company officers and men should politely refer members of the press to the officer in charge of the fire for any and all information. In turn, the officer in charge must use discretion and be careful in making any statement which may prove erroneous or embarrassing later, and in some cases difficult to correct or retract. We in the fire department must bear in mind that the press is a powerful element in our relations with the general public, and the favorable results we wish to attain in this field will be in direct proportion to the willingness and intelligence we use in cooperating with representatives of broadcasting companies, newspapers or other periodicals.



Notwithstanding all of these precautions, fires leave a path of death, destruction and misery, proportionately shared by every city and town. The only difference between departments in small communities and those in the larger cities lies in the fact that the larger departments have a greater frequency rate. The basic problems are essentially the same. Therefore, all fire departments, regardless of size, have definite obligations to protect to fullest measure the smallest single dwelling to the largest institution in their communities.

Over and above the actual work involved in extinguishing a fire, there are three main objectives we must always keep in mind, and they are as follows:

1. To give fire involved property back to its owners in as good condition as possible.
2. To give the streets back to the public as soon as possible.
3. To give the fire department back to community service as quickly as possible.

The extent to which we realize these aims, we approach the optimum of public service. In turn we gain the respect and admiration of the public and the satisfaction that comes with the knowledge of work well done.

MAKING A GOOD JOB OF IT

BY WARREN Y. KIMBALL

Quick Method for Determining Friction Loss and Pump Pressures

RECENTLY several fire chiefs requested that we include more quick formulas that pump operators could use for determining proper pump pressures. Accordingly, we present here the so-called "fraction system" for determining proper pump pressure. The method is an old one that is quick and easy to use. It is accurate enough for fire ground conditions.

Many firemen know that with a 1-in. tip at 45 pounds pressure there is 10 lbs. friction loss per 100 ft. of 2½-in. hose. The trouble is, however, that if a higher or lower nozzle pressure is employed, the friction loss changes with the change in velocity and flow. This may not be important with a relatively short line but in some situations, as at country fires, it may result in unsatisfactory pressures. If 80 pounds nozzle pressure is wanted for the 1-in. tip the friction loss will be 20 lbs. per 100 ft. rather than 10 lbs.

The "fraction method" simply requires that a fraction be remembered for each size of tip. The desired nozzle pressure for each tip (whether high or low), when divided by the fraction will give the approximate friction loss per 100 ft. of 2½-in. line. The fractions commonly used for the various sizes of nozzle tips are:

Tip Size	*Fraction*
¾	1/12
⅞	⅛
1	¼
1⅛	⅓
1¼	½

To show how well this works we have prepared a table including three or four different problems for each size of nozzle tip commonly used on 2½-in. hose. These problems include both long and short lines and high and low nozzle pressures. The first column shows the tip size and the fraction used in determining friction loss. The second gives the desired nozzle pressure. The third shows how much water the stream will throw in gallons per minute. The fourth shows the friction loss figure obtained by dividing the nozzle pressure by the fraction. The fifth gives the length of line in feet. The sixth gives the friction loss determined from the formula. This added to the nozzle pressure gives the required pump pressure as shown in column 7. The last column gives a friction loss figure for the same layout obtained from more accurate methods. In a number of cases the answers are identical.

Fraction Method for Determining Friction Losses and Pump Pressures for 2½ in. Hose

(Typical Problems)

1	2	3	4	5	6	7	8
Nozzle Tip Size and Fractional Formula	Desired Nozzle Pressure in Lbs.	Gallons per Minute	Friction Loss per 100 Ft. 2½-in. Hose	No. Ft. of Hose in Line	Total Friction Loss in Line	Required Pump Pressure ★	A More Accurate Friction Loss Figure
¾ in.	45	112	4	1000	40	85	33
(1/12 nozzle	60	130	5	800	40	100	36
pressure per	75	145	6	600	36	111	33
100 ft.)	100	167	8	500	40	140	36
⅞ in.	40	144	5	1000	50	90	55
(⅛ nozzle	60	176	7½	800	69	120	64
pressure per	80	205	10	500	50	130	53
100 ft.)							
1 in.	40	187	10	600	60	100	54
(¼ nozzle	60	230	15	400	60	120	52
pressure per	80	265	20	300	60	140	51
100 ft.)							
1⅛ in.	45	248	15	500	75	120	75
(⅓ nozzle	60	291	20	300	60	120	60
pressure per	75	325	25	300	75	150	74
100 ft.)							
1¼ in.	40	295	20	400	80	120	82
(½ nozzle	60	360	30	300	90	150	90
pressure per	80	415	40	200	80	160	80
100 ft.)							

★Pump pressure will help to indicate position of change-over valve.

In the average hose stream layout a difference of 5 pounds friction loss or pump pressure would mean a change of only one or two pounds nozzle pressure. There may be greater variation of pressure between different makes of hose or due to differences in elevation between pump and nozzle.

Another advantage of this method is that the pump operator knows very quickly whether the desired nozzle pressure is within the performance range of his pump. For example, assume that it is desired to supply two 800 ft. lines with 1-in. tips at 60 lbs. pressure from a 500 gpm pumper that can give only 250 gpm at 200 lbs. The operator knows from experience that at about 180 pounds he must place his change-over or transfer valve in pressure position. Thereafter the pump can supply only enough water for one big line. Without waiting to see if the layout will work he can determine whether his pump can give the desired nozzle pressure, as follows: Divide the 60 lbs. nozzle pressure by ¼ and to get 15 lbs. friction loss per 100 ft., 15 x 8 gives 120 lbs. loss in 800 ft., plus 60 lbs. nozzle pressure requires 180 lbs. pump pressure.

This indicates that this is the maximum layout at which the pump can work in volume or capacity position. The pump presumably can do the job, particularly if it is a centrifugal pump working from a fair hydrant. On the other hand, if the pump was at draft and pumping up a hill, about 50 to 55 pounds nozzle pressure might be about all that could be expected with the two lines. The operator could tell the officer what to expect.

In this case, the operator knew that the delivery of each stream would be about 230 gpm so that the pump could easily handle the two lines in volume or capacity operation, or could supply one line in pressure operation. This type of problem should be interesting for every member of a fire company and make it possible for every fireman to quickly estimate the desired pump pressure for any layout of 2½-in. hose.

Another practical use is in determining whether it is possible to increase the nozzle pressure with any layout already in use. For example. Assume a 400 ft. line of 2½-in. hose with 1¼-in. tip working outside at 50 pounds nozzle pressure (discharging 326 gpm). This is supplied by 150 lb. pump pressure. What pump pressure will be required to give 70 lbs. at the nozzle (discharging 386 gpm)? Divide the 70 lb. nozzle pressure by ½ and multiply the resulting 35 lb. friction per 100 ft. by 4 to get 140 lbs. friction in the 400 ft. line. Add the 70 lbs. nozzle pressure. Required pump pressure would be 210 lbs. This flow and pressure require a 750 gpm pumper.

In future issues of FIREMEN we hope to give further short cuts for determin-

ing fire ground pressures. These cannot be used in promotional examinations where more exact methods and answers are required to test each applicant's skill and ability with mathematics. But on the fire ground there is little opportunity for manipulation of slide rules or pencil and paper for figuring square roots. After all, the results obtained by the quicker methods applicable on the fire ground are so accurate that no expert could tell after looking at a hose stream which method was used.

Why not try this out at your next fire company drill. It should greatly stimulate interest in the various hose layouts. Have each man figure out the desired pressure. Check the results with Pitot gauge at the nozzle and pump pressure gauge to see how close each can come to the desired pressure when using this quick formula.

●

British Book for Architects on Fire in Buildings

FIREMEN often justifiably complain that architects and builders do not understand fire problems. A new book which firemen would do well to recommend to architect friends is entitled "Fire in Buildings." This is written by two British architects of high standing, Eric L. Bird and Stanley J. Docking. They say architects must not merely follow the requirements of local building laws, but must understand the fundamentals of fire safety and give them the same professional attention they customarily give other features.

"Fire in Buildings" is 296 pages, cloth bound. Readers who wish copies for their department library or to give to an architect friend, can obtain the book in the United States from D. Van Nostrand Co., Inc., 250 Fourth Ave., New York 3, N. Y., for $4.50. Canadian readers should order the book from the MacMillan Company of Canada, Inc., 70 Bond St., Toronto 2, Ontario, price $3.25. The original English edition of the book is published by A. & C. Black, Ltd., 4, 5 and 6 Soho Square, London W., England, price 15 shillings, sixpence, post free.

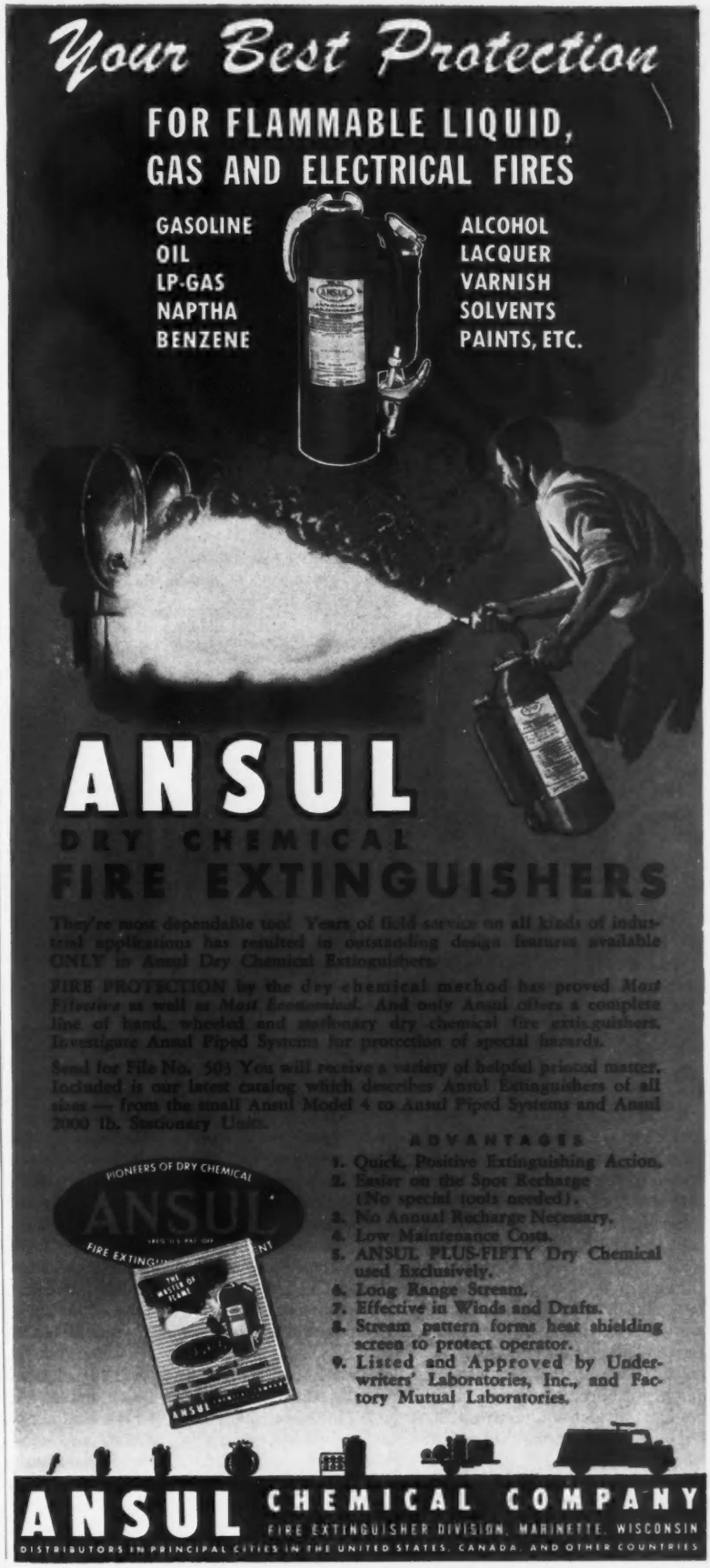
●

Manila Has New Fire Alarm System

MANILA'S bombed-out fire alarm system has been replaced with a $500,000 Gamewell installation, one of the most modern and complete yet installed outside of the United States.

The shipment included 600 three-fold fire alarm boxes capable of sending their signals despite broken wire or other abnormal conditions; equipment for a manually operated central station and for fourteen fire department houses.

The old Gamewell system, installed in 1903 had only 185 fire alarm boxes.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Fire Department Topics

Independence Fire Company Palmyra, N. J.

MAY 1887 is long remembered in the Borough of Palmyra for the most disastrous fire in its history. This disaster brought about the formation of one of the leading fire companies in South Jersey, originally, the Independence Hook and Ladder Company, and now the Independence Fire Company. A residential suburb of Philadelphia, Pa., Palmyra is a borough of 6700 persons.

Keeping in step with community growth, the company has developed from a hand drawn ladder truck to the company pictured above. The photograph was taken in October 1949, shortly before leaving for a firemen's parade in neighboring Salem County. All first prizes were won by the company. Later, a hand drawn hose wagon was purchased from one of Philadelphia's old volunteer companies. A Locomobile was purchased in 1914, equipped with a chemical tank and hose body. A Packard chassis was procured in 1919 to replace the Locomobile. The fire house was an old abandoned Pennsylvania Railroad station. This makes up part of the present fire station which was enlarged in 1923 to house a new 750 gpm Seagrave pumper. A Seagrave city service ladder truck was procured in 1926 which is still in service.

Three parade prizes were awarded the company in 1949 for the excellent condition of the 1926 city service ladder truck.

With clouds of war on the horizon in 1940, attention was given to modernizing the department. In 1941, a Mack 750 gpm pumper was delivered. Other plans were cancelled when war broke out and activities were centered on air-raid defense for the Camden and Philadelphia area. A Ford emergency and rescue truck was put in service in 1944 as part of the defense plan.

Following the war the replacement of the old Seagrave pumper was necessary. In 1947, a Mack 750 gpm pumper was delivered and the Seagrave retired. Plans are underway to replace the city service ladder truck with a 75 ft. aerial, completing the modernization planned in 1940. A new house is in the future plans. This will house all the company equipment and the Palmyra Ambulance Association's ambulance.

The fire company, consisting of fifty active firemen, is officered by a chief, deputy chief, two battalion chiefs and chief and assistant engineers. Administrative duties are handled by a president, secretary, treasurer, and board of directors, all elected annually.

Equipment of the company includes "all service" mask equipment, burning and cutting tools, asbestos suits, low pressure foam, deluge equipment, 4200 ft. of 2½-in. hose, 1000 ft. of 1½-in. hose, and first aid equipment. Both pumpers carry 200 gallons of water. The emergency truck has two-way radio on the local police wave length.

Despite the accomplishments of 63 years, the modern training received at the county and state fire schools indicates that more can be expected in the future.

New Station at Lewiston, Maine

THIS new $45,000 fire station serves the city of Lewiston, Maine. It houses Engine No. 3, a 750 gpm Maxim pumper, and is under the supervision of Captain E. J. Cote. The building, constructed of brick, and concrete block, was dedicated in February to "the memory of the brave firemen who lost their lives while in the performance of their duties." It contains an apparatus room, three bedrooms at the right, a kitchen, office, and a large recreation room.

New High Pressure Fog Truck at Bolton, Mass.

THE 26 volunteer firemen of Bolton, Worcester County, Mass. (population 800) are proud of a new high pressure fog truck which they put together from plans worked out by Chief Paul R. Holman. The unit is built on a GMC "350" chassis costing about $2200. It carries a 1000 gallon water tank and two 250 ft. reels of ¾-in. high pressure hose with fog nozzles. The pump is a W. S. Darley, 2 stage gear-drive type JFS giving 300 gpm at 150 lbs. or 60 gpm at 800 lbs. It has a 3-in. suction intake and one 2½-in. and two 1½-in. discharge connections. The specially designed body was built in nearby Leominster for $1400. A special feature is the provision of lucite doors to permit volunteer firemen to see what is in each of the numerous body compartments. The hose body contains 1500 ft. of 1½-in. fire hose. The truck carries a 3-section aluminum ladder, two oxygen masks, two all-purpose filter masks, carbon dioxide and dry chemical extinguishers.

The truck is operated at the department's No. 1 response to brush, building and airplane fires. It can make the uphill run to the Bolton airport in three minutes. It is planned to add additional rescue equipment such as resuscitators as soon as the department gets the funds. The truck was built within the limits of a $4500 appropriation supplemented by equipment already on hand and the labor of the volunteers. Bolton claims to be one of only two entirely volunteer organizations among the 400 fire departments of Massachusetts.

Atomic Weapons Report Shows What Fire Fighters May Be Up Against In Burns and Contamination

THE National Security Resources Board, charged with responsibility for civil defense planning, continues its policy of providing as much helpful information to the governors of states and other officials as is made available to the Board from the other agencies of the federal government. A recent statement "Medical Aspects of Atomic Weapons," prepared by the Department of Defense and the U. S. Atomic Energy Commission, is given in a 24-page pamphlet which can be obtained from the U. S. Superintendent of Documents, Washington, D. C., for 10c.

This document primarily interprets data from the Japanese bombings in which an atomic bomb, considered as roughly equivalent to setting off 20,000 tons of TNT, was exploded at a height of about 2,000 feet above the earth on a clear day. The Hiroshima and Nagasaki bombs caused total destruction and serious damage to buildings, including death and injury to people for 2 miles from the point at which the bomb was set off. The extreme limit of damage was about 4 miles.

In the case of such a high air blast as in Japan, some 15 to 20 percent of the deaths will probably be caused solely by nuclear radiation, according to this official statement. It says also that the remaining 80 to 85 percent will be caused primarily by injuries suffered in the collapse of buildings and by burns, although many of these also may be expected to suffer severe radiation exposure. It should be kept in mind that these figures are based on what happens in a Japanese city. The writers of this official document, as usual, miss the point that all cities are not like Japanese cities and that the extent to which a city may be expected to burn determines the resulting fire injuries. The report goes on to predict that it would be unrealistic to prepare for fewer than 40,000 to 50,000 severely burned persons from a single atomic explosion. This estimate is based on the assumption, which is by no means true, that all cities are going to have the same kind of fires as the wooden cities of Hiroshima and Nagasaki. The radiation hazard, the statement points out, is that within a half-mile radius of the ground center of the atomic exposure, nearly everyone not protected by earth, steel or thick concrete would die because of the concentration of radiation. At about 1½ to 2 miles, some flash burns could be expected but probably little radiation sickness.

The document contains the following statement:

"Much concern has been expressed regarding the contamination of drinking water. In a high air burst on a clear day, the fall out of radioactive materials is so small that dilution by the water probably ensures safety. The efficiency of the filtration plants, and the distance of sources of supply from cities are further safety factors. Fission products and fissionable material have a tendency to adhere to any organic material with which they come in contact. They will cling to the banks and the bottom of lakes, to the pipes, and other material to such a degree that it is probable that very little would ever reach the populace. Water containing one-millionth of a curie of fission products per liter is considered safe for drinking. (This means that about one atom in 250,000 billion billion is disintegrating every second.) Many popular mineral waters contain more than this. Hazards in the case of a storm or base surge remain to be evaluated. Testing for radioactivity is advisable. At Bikini, sea water from a heavily contaminated source was distilled (that is, turned into steam and condensed, not merely boiled) and found safe for drinking purposes."

As to the hazard of inhaling particles of matter, the size of the particle is said to be important. A combat-type gas mask will filter out 99.999 percent of all dangerous particles.

Wounds should be cared for in the same manner as any similar injury in an uncontaminated area.

The chief external radiation hazard in a contaminated area will come from gamma-rays thrown off by fission products or by materials made radioactive by neutrons or gamma-rays during the explosion. Alpha and beta radiations are explained to be dangerous chiefly if they come into actual contact with the skin, but it will be necessary to guard against contaminated dust. Filter-masks, clothing tight at wrists, ankles, and neck, and tight-wristed gloves will afford protection against alpha and beta particles. Clothing should be discarded at the edge of the contaminated area to avoid spreading radioactive contamination. Thorough soap-and-water bathing would be a valuable precaution. Gamma radiation cannot be turned aside by such simple measures as protective clothing, but dense material, such as concrete, can reduce its ionizing effect. Gamma radiation from contamination will not approach the power of direct bomb radiation, but it can still be severe. The best protection against contamination that gives off gamma radiation is to use instruments to detect its presence and to avoid any dangerous concentration.

What is a dangerous concentration of ionizing radiation? In the atomic energy program, a standard has been set, called

(*Continued on page 18*)

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HELMETS

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No other helmet made has ever shown the rugged stand-up-ability of this "pioneer" of all "regulation" helmets — which explains why it is first choice in the largest departments, where the duty is hardest.

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100% waterproof coats of sturdy black rubber with warm, maroon napped lining. Roomy, 2-piece body, raglan shoulders; fly front with instant snap and dee fasteners; roomy outside patch pockets. No stitching in main body; seams cemented, outside gum-strapped. Fully vulcanized after making.

US ROYAL FOOTWEAR

UNITED STATES RUBBER COMPANY
Rockefeller Center, New York

Atomic Weapons Report

(*Continued from page 17*)

the maximum permissible dose, which stipulates an exposure which experts believe a man could experience every day in his life without danger of injury. This has been fixed at a maximum of one-tenth of a roentgen a day with a weekly maximum of three-tenths of a roentgen. In emergency operations, a body could probably be exposed to 50 roentgens of total body radiation without injury and be able to continue at his duties, it is reported. The rate of exposure is of considerable importance. A person who receives 600 roentgens in a single exposure within a few minutes will have small chance of survival, but if a man received only 30 roentgens a day it would probably take a total of as much as 1,800 roentgens to prove fatal.

Protection from Atomic Explosion

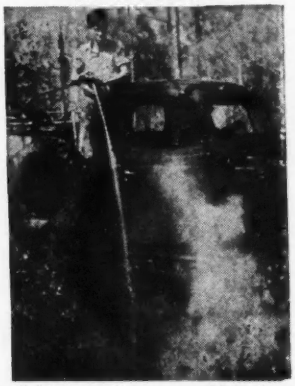
THE second report in a series prepared for the National Security Resources Board by the Department of Defense and the U. S. Atomic Energy Commission was sent to governors of states in February. It is entitled "Damage from Atomic Explosion and Design of Protective Structures." It is being printed and will be shortly available from the U. S. Government Printing Office at 10¢. The principal value of the report is an official interpretation of the lessons of atomic bomb explosions as on Hiroshima and Nagasaki. It describes the huge shock which the bomb blast puts on structures. Damage is due to a push from the blast followed by a suction push back toward the source of the blast. Buildings are not ordinarily designed to resist such loads. Some additional wind load in design appears to be one of the methods by which damage from future atomic explosions can be lessened. The report will be of interest to structural engineers for its detailed discussion of this and other features of building design.

The report contains valuable general suggestions for reducing the vulnerability of individual buildings. It indicates measures of protection that can be provided by site planning, design of new structures, and modification of existing structures. It points out that location is of primary importance and suggests both dispersion and duplication of essential buildings and facilities, with some very important facilities being placed underground.

It suggests that civil defense control centers should be provided at two or more locations, at least three miles from a probable target area. It suggests duplication of electric power sources and water supplies. It urges that buildings, so far as possible, be designed so that flying glass, plaster and furniture shall

(*Continued on page 21*)

NIP BRUSH FIRES IN BUD WITH A HALE TYPE FZZ PORTABLE!



Fire fighters are "run ragged" during the Spring months with brush and field fires . . . and in hundreds of communities they have found a Hale FZZ Portable Pumping Unit mighty handy in putting such fires out quickly and easily. Picture shows a Hale Type FZZ Portable Pumping Unit fighting a brush fire from a moving truck. The unit can be carried on virtually any type of equipment, making it possible to fight fire while in motion, using a booster tank for source of water.

The FZZ will supply, from draft, 60 U. S. Gallons per minute at 90 lbs. pump pressure; and 150 U. S. Gallons per minute at 30 lbs. It can supply two capable fire streams through 1½" lines, using nozzle tips up to ⅝".

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- Saves space — fits in any corner
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Equip now for all-around protection with John BEAN Airport Special

ONE OF the hundreds of versatile John Bean Airport Specials in use all over the country. 435-gal. tank—60 G.P.M. Pump at 850 lbs. pump pressure—2 hose lines. Can be mounted on any style or size chassis.

FIRE-FIGHTING equipment for airports has a two-way job to perform—to combat crash fires *plus* non-crash fires in hangars, buildings, and gasoline trucks.

That's a tall order but one that the John Bean Airport Special is easily capable of filling. This reliable unit has proved itself in actual use time after time.

Bean Airport Specials include the famous Bean high-pressure fog—fog foam, plus a regular foam system. These fire fighters can be mounted on any style or size chassis and accessories added to meet your specifications.

Carrying its own water supply, the Bean unit goes into action the instant it arrives at a blaze. It can be manned without a special crew, by your regular field personnel after our training.

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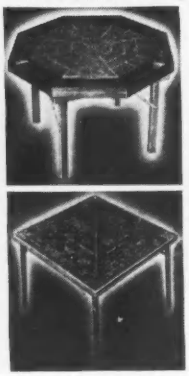

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SOMERVILLE, MASS.

Meeting of NFPA Committee on Firemen's Training meeting at Memphis in January. Seated, left to right: Richard E. Vernor, Chairman, Fire Department Instructors Conference, Manager, Fire Prevention Department, Western Actuarial Bureau, Chicago; W. Fred Heisler, Training Consultant, Oklahoma A & M College, Stillwater; Chief J W. Just, Vice Chairman of Committee, Director, Fire Service Extension, University of Maryland, College Park; W. A. Ross, Chairman of Committee, Consultant, Public Service Occupations, U. S. Office of Education, Washington, D. C.; Chief Robert A. Bogan, Fire Department, Baton Rouge; Warren Y. Kimball, Editor, NFPA "Firemen" magazine. Standing, left to right: Chief Allen E. Erwin, Florida State Fire College, Ocala; Chief Lloyd Layman, Fire Department, Parkersburg, W. Va.; Captain Harry Wolff, Fire Prevention Department, Western Actuarial Bureau, Chicago; R. J. Douglas, Associate Professor of Fire Protection, Oklahoma A & M College, Stillwater; Roi B. Woolley, Associate Editor, "Fire Engineering"; Col. H. R. Brayton, Director, Firemen Training School, Texas A & M College, College Station; D. E. Barrett, Assistant Director of Fire Training, Ontario Fire Marshal Department; Robert C. Byrus, Fire Protection Engineer, Iowa State College, Ames; Edgar A. Spotz, Adviser, Fire Service Training, Public Service Institute, Harrisburg, Pa.; Battalion Chief A. M. Grunwell, Executive Officer, District of Columbia Fire Department; Chief J. I. Fetters, Assistant State Supervisor, Trade and Industrial Education, Lincoln, Nebr.; Thomas S. Ward, Special Supervisor of Fire Training, California State Department of Education, Sacramento; Sergeant A. M. Peel, Pump School, D. C. Fire Department; George J. Richardson, Secretary, International Association of Fire Fighters, Washington; Emmet T. Cox, Secretary of Committee, Field Officer, Fire Prevention Department, Western Actuarial Bureau, Chicago.

Ohio Chiefs Produce Movie on Hose Evolutions

THE Ohio Fire Chiefs Association has produced a 16 mm black and white sound movie entitled "Hose Evolutions and Hose Line Equipment," running time 28 minutes. The film is designed primarily to aid new recruits in basic methods but also serves as a refresher in current practices for experienced men. Cost of the film was underwritten by the Wooster Brass Company of Worcester, Ohio. Production committee consisted of Battalion Chief Emmet Byrne, Cleveland; Chief Frank Vernotzy, Akron; District Chief Arnold Papenhagen, Toledo; District Chief Tom Brightwell, Dayton; Battalion Chief Glen Barr, Columbus; Captain Gerald Vernotzy, Akron; and Chief Lloyd Eberhart, Wooster.

Copies of the film are available for rental or purchase by addressing: Department of Training, Ohio Fire Chief's Association, Care Chief Chas. Bryan, Box 486, East Liverpool, Ohio. Copies can also be obtained for $2.50 per showing day or $67.50 outright purchase, from Austin Productions, Film Distributors, Box 713, Lima, Ohio. The U. S. Army Signal Division is planning to buy 70 copies, and 40 copies have been sold to fire schools and fire chiefs organizations throughout the United States and Canada. There have already been more than 200 showings of the rental films.

Reduction of Smoke Damage

(Continued from page 11)

up in a window of the room we wished to work in. Another window was opened in the bathroom directly across the hall. As soon as the extractor was turned on men were able to work in the room with axe and booster line. Had it not been for the supply of fresh air, fire and smoke damage would certainly have been much greater. Smoke damage was slight.

Method number three: This method of dilution is used almost as often as method number one if we count the number of times we use it at the finish of our operations. However, it may be used early in a fire. Let's take a mattress fire in a hotel. Yes; we have them in Fargo! We also have an ordinance dealing with mattress fires and a companion ordinance which makes mandatory that all fires in hotels be reported immediately to the fire department.

This fire occurred in a room off a long hall. A window on a court. A smoke extractor was placed in the window about the same time the fire was knocked down enough to allow removal of the mattress. Additional extractors blowing fresh air into the building were placed in windows on the windward side to confine the smoke to the smallest possible area. Another was placed at the far end of the hall on the lee side and discharged smoke to the outside. In this particular hotel, enclosed stairways give floor

separation holding smoke to one floor. In approximately 15 minutes no odor of smoke could be detected outside the room which had the fire.

We have mentioned our small 1,000 cu. ft. per minute extractor. We use this to blow out closets and other spaces where it is hard to get circulation of air for removal of smoke. Smoke invariably seems to find its way into small areas where contents of considerable value are stored.

The concluding portion of Chief Wells' paper will appear in a subsequent issue of FIREMEN. *In it he tells how deodorants may be used to remove or lessen offensive smoke odors remaining after a fire.*

●

Atomic Weapons Report

(*Continued from page 18*)

cause a minimum amount of injury.

While specific discussion of fire protection contains a number of technical errors, the general advice given is along proper lines. It points out that narrow fire breaks in the Japanese cities were of little use in areas of wood frame construction.

It makes the error, which appears to be in the minds of many people who have studied Japanese cities and their reaction to the atomic bombs, that all other cities are going to react the same way. It says that provision of an adequate water supply is probably the most important single element in the control of fires. In Japanese cities, some of the fires were successfully fought and water supply proved important. It claims that storage tanks for local water supply would be of value but only for incipient local fires. The report concludes that such tanks would probably have limited value in large-scale fire fighting operations. As a matter of fact, unless storage tanks are provided for local supply, it will probably not be possible to engage in large-scale fire fighting.

The report stresses the desirability of locating fire stations on the outskirts of the city. It implies that effective fire department mutual aid is dependent principally on standardization of hose couplings or the use of adapters. This, of course, is not a major problem in joint fire defense planning among cities and appears trivial in comparison with the organizational problem involved.

The report includes suggestions for the construction of shelters. It is possible, of course, to design shelters giving almost complete protection but only at prohibitive expense and inconvenience to people. On the other hand, shelters could be provided which will give a considerable measure of protection against all except direct hits. For the bulk of the population, shelters giving some protection are suggested. This in general was the shelter policy followed in England in World War II.

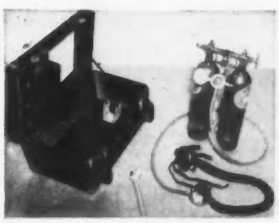
Protect Your Citizens with Better-Equipped Rescue Squads

Scott Demand Inhalator

THE new Scott *Demand* Inhalator provides efficient portable oxygen equipment for emergency use, *at low cost.* Offering "demand" flow of oxygen, plus constant flow if needed, the Scott *Demand* Inhalator can be used independently or as supplemental equipment in resuscitation, freeing resuscitators for use elsewhere.

The Scott *Demand* Inhalator is simply designed, easy to use. No adjustments of any kind are needed; department personnel does not require special training to use this new Scott product.

TYPE "A" Scott Demand Inhalator — portable, or for fixed installation in truck or ambulance (without cylinder) **$88.50**



TYPE "B" Scott Demand Inhalator including carrying case (without cylinder) **$147.50**

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SIMPLE. The Scott *Demand* Inhalator is easy to use — requires no special training. No adjustments are necessary — just a quarter turn of the cylinder valve and the Inhalator is ready to restore shock, immersion and heart-ailment victims.

EFFICIENT. With the Scott Inhalator oxygen is provided in ample quantity as "demanded" by the victim, conserving precious oxygen supplies. Constant flow also available when needed, "at the touch of a button."

LOW COST. In any one of several models the Scott *Demand* Inhalator is available at a cost well below that of other equipment of comparable scope. Investigate this new low-cost oxygen unit *now!*

Made by the manufacturers of famous Scott Air-Pak Safety Breathing Equipment.

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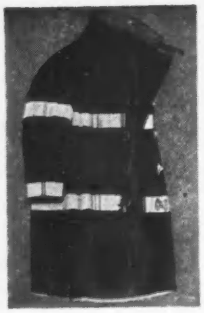


The Original MIDWESTERN Yellow Striped Safety Coat Is Again Available . . .

for Men of Action!

Here's Protection and Comfort in Your Hazardous Work of Safeguarding Life and Property Against FIRE!

Modern fire fighting calls for *specialized* protective clothing . . . clothing that safeguards the fireman's life on every run . . . clothing that enables him to use his equipment to the fullest advantage.

Every Midwestern product combines the thoughts and suggestions of practical Fire Chiefs and firemen from every section of the country . . . and every purchaser profits from years of Midwestern research and experience. That is why the famous Mackinaw Coat and other Midwestern clothing have embodied in their design every feature necessary for the protection and comfort of firemen.

In our vast selection of crude rubber materials you will find a type of fabric suitable for your climate and needs. The softness and flexibility in the high-grade materials used are your assurance of long time service and comfort. Many Fire Chiefs are now including Midwestern clothing in their regular yearly budget and by placing your order early you can be assured of this adequate protection when needed.

For complete information have your Midwestern dealer show you our new garments now manufactured from crude rubber compounds. A letter to the factory will also bring you material samples for your inspection.

We now have available: White, Ivory and Brown crude rubber coats for Chiefs, Assistants and other officers: also all sizes short and ¾ length felt lined Firemen's boots for immediate shipment.

NONE GENUINE WITHOUT THIS TRADE MARK

MIDWESTERN MFG. CO. MACKINAW ILLINOIS

Manufacturers of the Famous **MACKINAW Coats**

Extra

THE New Beacon Ray Light

Extra **VISIBILITY . . . from every angle**
Beacon Ray beams rotate through full 360°

Extra **STRENGTH . . .**
Beacon Ray emits two powerful signal beams (180° apart)

Extra **360° PROTECTION . . . running or parking**
Full rotation provides "area warning" regardless of vehicle position.

Federal Enterprises' new Beacon Ray Light is Extra in every respect. New through and through, this advanced design warning light is an entirely new concept in effective signalling equipment.

Your vehicle will be safer with Beacon Ray Write today for full particulars

FEDERAL ENTERPRISES, INC.

Formerly: FEDERAL ELECTRIC COMPANY, INC.

8717 S. STATE STREET · CHICAGO 19, ILLINOIS

Coming Events

NFPA Annual Meeting May 15-18
See page 6

Southwestern Division of IAFC

The Convention of the Southwestern Division of the International Association of Fire Chiefs will be held at Port Arthur, Texas, May 4–6. Hotel reservations may be made through Asst. Chief Eugene Ray, Port Arthur Fire Department.

Oregon Convention

The annual Convention and Conference of the Oregon Fire Chief's Association will be held June 1–3 at Salem. Requests for hotel reservations should be made to the Salem Fire Department and should be accompanied by $5.00.

Fire Schools

Indiana. Sixth Annual Seminar and Training Course in Arson Detection, Purdue University, West Lafayette, Ind., May 8–12.

Iowa. Twenty-sixth Annual Fire School, Iowa State College, Ames, May 16–19.

Michigan. Twenty-second Annual Fire College, University of Michigan, Ann Arbor, June 20–23.

Nebraska. State Fire School, Grand Island, April 23–25. Regional one day fire schools: Seward, May 21; Plainview, May 28; Loup City, June 4; Holdrege, June 11; Alliance, June 18.

Oklahoma. Seventeenth Annual Short Course of Oklahoma Fire College, A & M College, Stillwater, April 10–14.

South Dakota. State Fire School, Rapid City, S. D., June 19–23.

Texas. Twenty-first Annual Session Firemen's Training School, Texas A & M College, College Station, Texas June 9–14.

West Virginia. Twentieth Annual Fire School, Morgantown, July 24–28.

●

NFPA Needs Help in Revising List of Fire Films

THE NFPA Committee on Visual Education is now engaged in a revision of its published list of films on fire subjects. They are desirous of knowing about fire films and request that readers of FIREMEN notify Mr. Melvin R. Freeman, NFPA Public Relations Manager, 60 Batterymarch St., Boston 9, Mass., of any fire films or film strips giving the following information:

(1) Length and number of rolls and running time.
(2) Size (16-35 mm).
(3) Silent or sound.
(4) Color or black and white.
(5) Whether film is safety (acetate) or nitrate stock.
(6) Approximately 35 word description of film content.
(7) Terms of loan, rental, or purchase.

Read What Users Say About
INDIAN FIRE PUMPS!

ACTUAL UNSOLICITED TESTIMONIALS TAKEN DIRECTLY FROM OUR FILES

"Saved A Store An. Several Buildings"

We consider your ***INDIAN FIRE PUMPS*** *one of the most important pieces of equipment in our company. Just two days ago we saved a Dry Goods store and several other buildings with small water damage by using* ***INDIANS.***

INDIANS *play a large part in extinguishing many of our fires and we intend to get more in the near future.*

J. S. Williams

"Firemen Prefer INDIANS To Any Other Extinguisher"

I once thought ***INDIAN FIRE PUMPS*** *had use only where a volunteer department was putting out grass fires. Since including a No. 90 galvanized* ***INDIAN*** *on our apparatus, however, I found that the men would not use any other type of extinguisher.*

That led me to buy a number of No. 90 solid brass tank ***INDIAN FIRE PUMPS*** *and place them on all our equipment. Our men are most enthusiastic about* ***INDIANS*** *and prefer them to any other hand extinguisher for all Class A and small oil fires.*

George P. Lasher, *Fire Chief*

If you, too, have used INDIAN FIRE PUMPS to advantage why don't you tell us about it? We would like to hear from you.
INDIAN
PATENTED
AIRCOOLED TANK

"In No Time At All Had The Fire Out"

Today, I glanced out on the street and saw smoke coming from the hood of an automobile parked in front of my building. I rushed out and a man and a woman had gotten out of the car and raised the hood. A nice flame of fire had developed.

I rushed back in my store and got one of your ***INDIAN FIRE PUMPS*** *and in no time at all had the fire out. Someone called the fire department, but I had the fire out before they arrived.*

I bought these ***INDIAN FIRE PUMPS*** *from you three years ago. They had been standing filled with water but never used until today—they worked perfectly.*

A. G. Preston, *President*
Utica Office Supply Co., Inc.

Agents Wanted

FOR DESCRIPTIVE INFORMATION ON THESE FAMOUS FIRE EXTINGUISHERS WRITE TO

D. B. SMITH & CO. UTICA 2, N. Y.

PACIFIC COAST DISTRIBUTORS:

CANADIAN AGENTS:

FIREFLY

License Plate Signs

LAS VEGAS FIRE DEPT. TYPE D

PLEASANT VALLEY FIRE DEPT. TYPE C-2

SPRINGFIELD FIRE DEPT. TYPE E

24 Hour Visibility

.064 Aluminum 4" x 10"

Also: Fire Chief, Asst. Fire Chief, Fire Company, Fire Dist., Fire Police, Fire Capt., Fire Lieut., Fire Warden, and Fire Marshal *in any type—at the same Price.*

Made with "SCOTCHLITE" BRAND REFLECTIVE SHEETING

A Product of MINNESOTA MINING & MFG. CO. St. Paul, Minnesota

Featuring VISIBILITY LEGIBILITY DURABILITY

12 or More, any type 90c ea.
Less than 12 $1.00 ea.

Cash—C.O.D.—or End of Month
(Orders of LESS THAN 12 must be CASH or C.O.D.)

PACIFIC REFLEX SIGNS
Box 323, McMinnville, Oregon

FIREMEN'S UNIFORMS

SHIRTS
BADGES
CAPS
INSIGNIA

Manufacturers of Uniforms for over 50 years

Official Makers of Uniforms for New York City Fire and Police Departments, and Serving Other Departments from Coast to Coast.

RUSSELL UNIFORM CO.
192 Lexington, New York 16, N. Y.
Corner 32nd Street: Phone MU 6-0828
Write for Fire Dept. catalog H-60

Variety in NFPA Membership Applications

THE Fire Company Section is but a small part of the total membership in the National Fire Protection Association. The Association not only has other sectional organizations including the Fire Marshals Section, Electrical Section, and Railroad Section, it has organization members embracing more than one hundred national and regional organizations interested in fire safety. In addition to these there is the great diversity of associate members from almost every quarter of the globe. For example, during February, new members were enrolled from 42 of the 48 states, the District of Columbia, Hawaii, Puerto Rico, Canada, England, Sweden, Russia, India, Brazil, Chile, and Iran.

Among the new members were 47 fire departments, 30 hospitals, 31 industries, 29 insurance men, 26 fire equipment companies. There were 28 new members from Canada.

Among the Associate Membership applications received were:

Fireman Arthur Adler, The Bronx
John Brady Hospital, Colorado Springs
Brandchefsexpiditionen, Malmo, Sweden
Insurance Agent George Brown, Las Vegas Nevada
W. S. Butterfield Theatres, Detroit
Building Inspector Carasco, Longview, Wash.
Chinniah Doraiswamy, Borshal, India
Halifax Shipyards, Halifax, N. S.
Lee Hood, Fire Extinguisher Salesman, Spearfish, S. D.
Meshdunarodnaja Kniga, Moscow, U.S.S.R.
Fire Chief Harold Brush, Ojibway, Ont.
Phillips Fruit Dealers, Orlando, Fla.
Officer Ooi Siew, Seremban Fire Brigade, Malaya
State Industrial Farm for Women, Gootchland, Va.
Iranian Airways, Tehran, Iran

●

New Members in NFPA Fire Company Section

THERE are eighteen new members in the Fire Company Section of NFPA. This brings the total number of companies to 1403. Fire companies recently enrolled include:

New members of the Section are:

Boston Heights Fire Dept., Hudson, Ohio
Buckley Vol. Fire Dept., Buckley, Wash.
Claremont Fire Dept., Claremont, Calif.
Falmouth Fire Dept., Falmouth, Me.
Fogelsville Vol. Fire Co., Fogelsville, Pa.
Garden City Beach Vol. Fire Brigade, Weller Park P. O., Ont.
Gray Air Force Base Fire Dept. Camp Hood, Killeen, Tex.
Huntington Woods Vol. Fire Co., Huntington Woods, Mich.
Leitchfield Vol. Fire Dept., Leitchfield, Ky.
Louisburg Vol. Fire Dept., Louisburg, N. S.
Martinsville Fire Dept., Martinsville, Va.
Merrionette Park Fire Dept., Chicago, Ill.
Overland Park Fire Dept., Overland Park, Kan.
Peekskill Fire Dept., Peekskill, N. Y.
Randolph Chemical Engine Co., No. 3, Mt. Freedom, N. J.
Rose City Fire Dept., Portland, Ore.
Ventura School for Girls, Fire Dept., Ventura, Calif.
Waverly Fire Dept., Waverly, Ohio

The New NFPA Advertising Manager

THE National Fire Protection Association announces the appointment of Henry S. Gere as Advertising Manager. Mr. Gere comes to the Association with a background of twenty years' experience in promotional activity for the independent and chain grocery store trade with Lever Brothers Company where he served as Sales Promotion Supervisor.

Mr. Charles S. Morgan, who formerly handled advertising matters for NFPA will devote full time to his duties as Assistant to General Manager Percy Bugbee.

●

FIRE COMPANY SECTION MEMBERSHIP

($12.50 annual dues) Eligible:

(1) all bona fide volunteer fire organizations in any community.

(2) all fire departments and companies in communities of less than 25,000 population.

(3) all industrial fire brigades.

Member companies receive ten copies of FIREMEN magazine each month, mailed to the homes of individual firemen. Beyond the ten, additional copies of FIREMEN cost $1.25 per year.

Fire Company Section members receive at their headquarters, one copy of all publications sent to NFPA individual associate members.

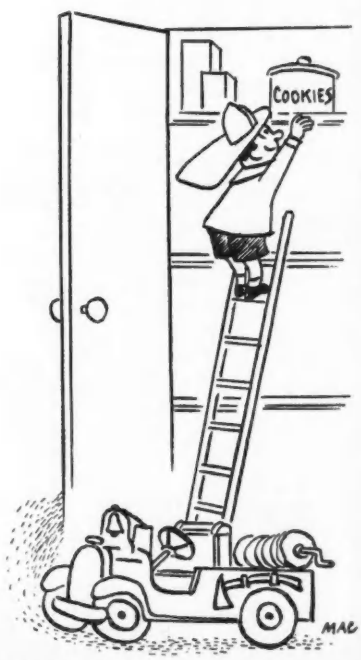
INDIVIDUAL ASSOCIATE MEMBERSHIP

($12.50 annual dues) Eligible:

Fire departments not eligible for Fire Company Section membership, officers, firemen, and others interested in fire safety. NFPA associate members in the fire service receive: one copy of FIREMEN magazine monthly, the NFPA Quarterly, the monthly Fire News, technical standards, popular bulletins and posters. Member fire departments of any size may purchase extra copies of FIREMEN for their fire stations at $1.25 per year. Write for full details.

All associate members have one vote in Association affairs.

●



G. McCartney

...the true measure of MODERN DESIGN

Experienced fire officials know that the true value of fire apparatus is more than a matter of outward design. They are quick to recognize that it's what a fire engine can *do*—and *keep on* doing—that really counts!

One thing they look for is *reliability*—unfailing, fast yet safe response. Then they want *versatility*—equipment that can master any type of fire they may be faced with. And equally important, they demand *durability*—apparatus built to stand up year after year under even the severest service.

That's why Macks are more and more first choice with progressive departments throughout the country. Good reasons, too, why you can count on getting the best in modern fire apparatus performance when you *Modernize with Macks.*

ALL-AROUND PROTECTION FOR WILLOW SPRINGS, ILLINOIS:

Enduring reliability and complete modern fire-fighting facilities are combined in this Mack Type 505, 500-gpm pumper tanker:

- **Pressure-volume centrifugal pump with added 3rd stage for high pressure fog.**
- **500-gal. booster tank.**
- **2 top-mounted hose reels, each with 200-feet 1" high pressure hose and fog guns.**
- **Rockwood foam and wet-water proportioner.**
- **1,000 feet 2½" hose.**
- **Aluminum ladders.**
- **Coupe cab with top-mounted Federal siren and Propello-Ray light.**

Be Performance-Wise
modernize with **Mack** *...outlasts them all*

Mack Manufacturing Corporation
Fire Apparatus Division
Long Island City 1, New York

Factory branches and distributors for service and parts in all principal cities. In Canada: Mack Trucks of Canada, Ltd.

TRIPLE COMBINATION PUMPERS—500 TO 2000 GPM...SQUAD AND HOSE CARS...AERIAL, CITY SERVICE AND QUADRUPLE COMBINATION LADDER TRUCKS

NO TIME LOST "WONDERING" HOW TO USE THIS EXTINGUISHER!

The *first 10 to 30 seconds* can mean the difference between *no loss* and *complete destruction* when fire starts. That's why Randolph's simple, *obvious* operation is so important in stopping fires *before* they spread!

Anybody can get a Randolph into action FAST! No valves to turn, no nozzles to adjust; just point and press your thumb! Randolph's snowy CO_2 is non-damaging, evaporates without a trace. It's non-toxic, won't conduct electricity, deteriorate or freeze.

UNDERWRITERS' APPROVED

Learn how Randolph gives your plant better *preventive* fire protection! Write for full information today!

RANDOLPH LABORATORIES, INC.
5 EAST KINZIE ST. • CHICAGO 11, ILLINOIS

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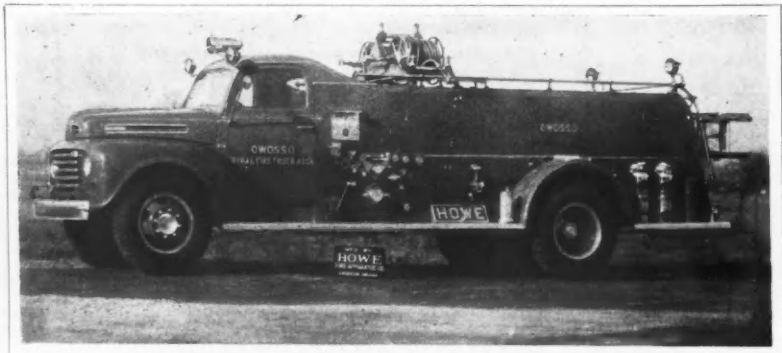


HOWE Fire Truck Equipment Meeting Every Service Since 1872
Centrifugal, Rotary and Piston Pumps supplied
HOWE FIRE APPARATUS COMPANY, 1406 West 22nd Street, Anderson, Indiana

Manual Covering Surplus Electronic Equipment

MEMBERS of fire departments using war surplus radio equipment should find of value a simplified manual to guide users of common electronic equipment, published by the U. S. Department of Commerce, Office of Technical Services. This is a second volume covering A.M. Receivers and Transmitters and provides basic circuit diagrams, parts, values and voltages of equipment. Copies of PB 99539 *Schematic Manual for Surplus Electronic Equipment*, 43 pages with diagrams, may be obtained from the Office of Technical Services, U. S. Department of Commerce, Washington, D. C., at 25c per copy. Copies of an earlier volume are still available from the same office for $1.00 per copy. Orders should be accompanied by check or money order payable to the Treasurer of the United States.

Comparative Strength of Jute and Manila Rope

UNDERWRITERS LABORATORIES, Inc., 207 East Ohio Street, Chicago, Illinois, has recently issued an informative memo calling attention to the fact that soft fibre jute rope used as a substitute for manila and sisal rope has only about 60 per cent of the strength of manila rope. The minimum breaking strength in pounds of jute, $\frac{5}{8}$ in. in diameter, is 2640 pounds as compared with 4400 pounds for manila rope meeting Federal Specification No. T.R. 601a. Jute rope of $\frac{3}{4}$ in. in diameter has a breaking strength of 3240 as compared with 5400 pounds for manila rope.

The report also states that jute rope absorbs water more readily than rope made of harder fibres and is not as resistant to abrasion as manila and sisal rope. Jute rope loses about 10 percent of its strength due to wetting. It has about the same elongation as manila rope. In general fire department specifications call for use of manila rope particularly for life lines but fire departments may have some jute hand lines.

Three Reprints Available

THE following three FIREMEN reprints are available from the National Fire Protection Association at the price of 10¢ per copy.

"Little Drops of Water" by Chief Lloyd Layman, Parkersburg, W. Va., Fire Department. Reprinted from FIREMEN for February 1950.

"Firemen Go to the Schools" by Melvin R. Freeman, Public Relations Manager, NFPA. Reprinted from FIREMEN for February, 1950.

"Super Markets and Suburban Shopping Centers" by Warren Y. Kimball, Editor, FIREMEN. Reprinted from FIREMEN for March, 1950.

CHAMPION PORTABLE PUMPERS

Check Performance Before You Buy

$678.50

Weight Only
225 Pounds

300 GPM @ 85 Lbs. Pressure
225 GPM @ 120 Lbs. Pressure
150 GPM @ 145 Lbs. Pressure
100 GPM @ 180 Lbs. Pressure

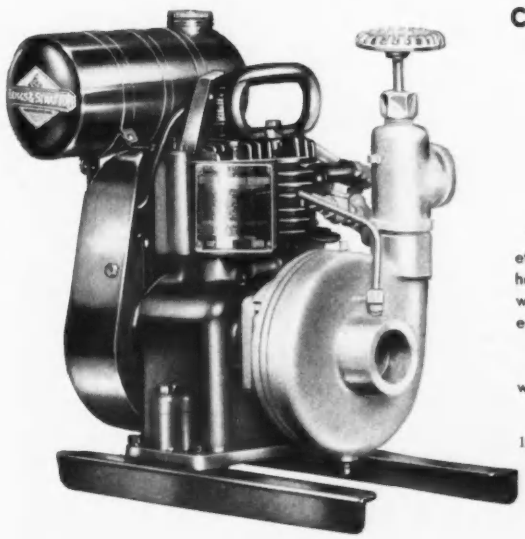
Pump — Centrifugal type, with phosphor bronze impeller. Built to the exacting standards of the big Underwriter Champions. Bolted direct to the engine to assure perfect alignment for long trouble-free service. Automatic Vacuum Primer, Underwriter approved type. Two 2½-inch discharge valves. Suction inlet, 2½-inch.

Engine — Stamina and long life to match the pumps they power. Sturdy and rugged construction qualify them as heavy duty engines for fire service. Ample power for full pumping load.

Auxiliary Motor Cooling — The pump delivers a constant supply of water to cool the engine and prevent overheating even when under continuous load for days and weeks. Non-clogging strainer protects engine cooling system from foreign matter.

Gauge — Combination pressure and vacuum type. Width 19¼ inches. Height 27 inches. Length 50 inches with carrying handles or 38 inches with handles removed.

No. E768. Champion Portable Pumper **$678.50**
With starter and generator for complete battery ignition (in addition to magneto ignition which is standard), $728.50 not including battery.



Champion Pumpers to Throw Fire Streams and to Relay Water — 3 Models to Choose From

No. 1½ AE	No. 4 AE	No. 7 AE
$99	$192	$225

The pump and motor are synchronized for matchless centrifugal pumping efficiency and dependability. In designing these Pumpers Darley engineers have blended the power requirements of the Champion Centrifugal pumps with the power and speed characteristics of the Briggs and Stratton gasoline engines.

Automatic Vacuum Primer, Underwriter approved type.

Champion Portable Pumpers, being centrifugals, will handle without injury, water with sand, dirt and gravel content.

MODEL NO. 1½AE — Weight 57 lbs. Dimensions: width 12 inches, length 16¾ inches, height 16 inches.
Capacity up to 40 gallons per minute. Pressures up to 75 lbs.
Pump — Champion Centrifugal. Discharge outlet 1¼-inch iron pipe thread. Suction inlet 1½-inch iron pipe thread. Shutoff gate valve on the discharge outlet.
Engine — 1½ Horsepower Briggs and Stratton gasoline engine, 4 cycle, air cooled. Gas tank capacity ½ gallon. Enough gas to operate the engine under full load for 2 to 2½ hours.

MODEL No. 7AE — Weight 150 lbs. Dimensions: Width 19 inches, length 21 inches, height 22 inches.
Capacity up to 300 gallons per minute. Pressures up to 80 lbs.
Pump — Champion Centrifugal. Discharge outlet 2½-inch iron pipe thread. Suction inlet 2½-inch iron pipe thread. Shutoff gate valve on the discharge outlet.
Engine — 7 Horsepower Briggs and Stratton gasoline engine, 4 cycle, air cooled. Gas tank capacity 1½ gallons. Enough gas to operate the engine under full load for 1¾ to 2 hours.

MODEL No. 4AE — Weight 115 lbs. Dimensions: Width 18½ inches, length 19 inches, height 20 inches.
Capacity up to 200 gallons per minute. Pressures up to 75 lbs.
Pump — Champion Centrifugal. Discharge outlet 1½-inch iron pipe thread. Suction inlet 2-inch iron pipe thread. Shutoff gate valve on the discharge outlet.
Engine — 4 Horsepower Briggs and Stratton gasoline engine, 4 cycle, air cooled. Gas tank capacity one gallon. Enough gas to operate the engine under full load for 2 to 2½ hours.

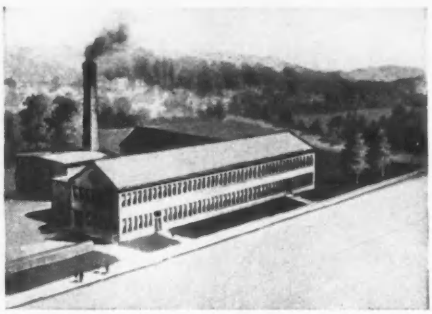
Threads — Straight iron pipe thread standard; special threads at extra charge.

W. S. DARLEY & CO. Established 1908 Chicago 12, Ill.

LET'S LOOK AT THE RECORD...

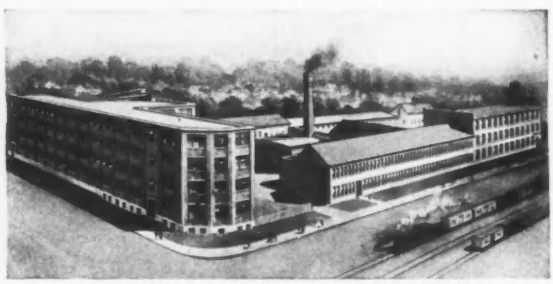
GROWTH OF THE INDUSTRY

THE FIRST FACTORY
NEWTON HIGHLANDS, MASS. 1866—1885



Larger quarters became necessary and Gamewell moved into this plant capable of accommodating about 100 workmen.
NEWTON UPPER FALLS, MASS.1885—1904

The business continued to grow, and the plant was enlarged.
NEWTON UPPER FALLS, MASS. 1904—1913



For protecting its own interests and those of its customers against fire, the highly fire resistive building at the left was erected in 1913, and has since housed Gamewell's manufacturing operations.
NEWTON UPPER FALLS, MASS. 1913—1949

TRADE MARK
GAMEWELL
REG U.S. PAT OFF.

Manufacturer of

MUNICIPAL FIRE ALARM SYSTEMS

John N. Gamewell, after the first successful application of the Morse telegraph to fire signaling in 1851 (Boston, Massachusetts) acquired the right to use the invention and thus pioneered and assumed leadership in a new industry. The leadership of GAMEWELL in the fire signaling field has since been maintained.

Basic Principle

Wide margins of safety in operation are essential in signaling systems designed for the protection of life and property. Adherence to this basic principle has contributed most largely to the world-wide acceptance of the Gamewell fire alarm system.

World-Wide Use

Gamewell fire alarm systems, equipment and methods of transmitting fire alarms are now used in cities of the U.S.A., Canada, other foreign countries and colonies having an aggregate population of approximately —

U.S.A.	58,000,000*
Canada	4,500,000
Other Foreign Countries	17,000,000
	79,500,000

*72% of the urban population.

The Producers

A small group of highly skilled New England workers, during the past century, have continued to produce signaling equipment of such efficiency and reliability that buyers, with few exceptions, have selected the GAMEWELL system.

We invite your inquiry.

THE GAMEWELL COMPANY

Newton Upper Falls 64, Massachusetts